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THE IRON TRADE REVIEW

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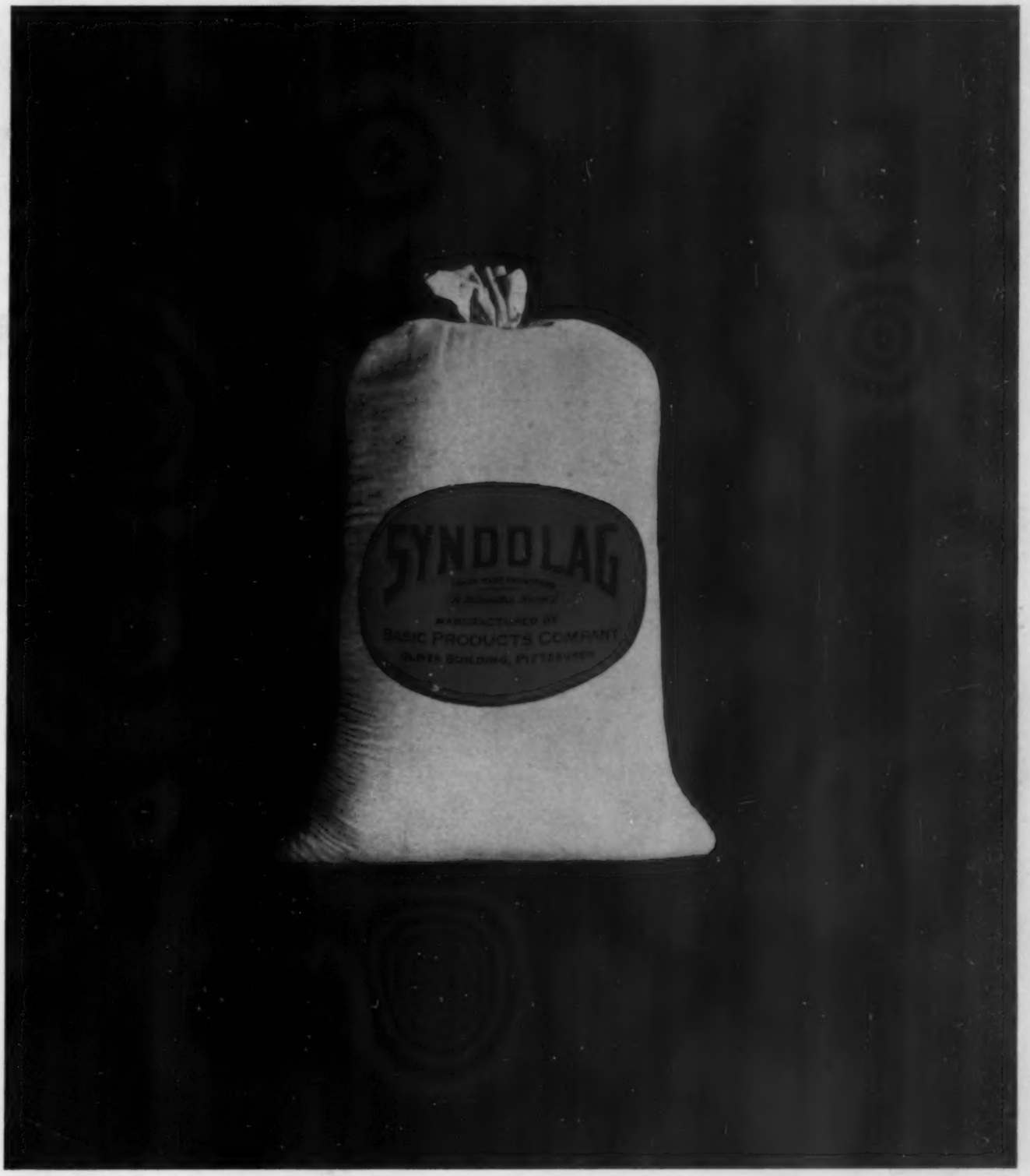

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Opportunities, page 117. Second Hand Machinery, page 119. Fill-in and Contract Work, page 124.

CONSERVE RESOURCES

THE present enormous demand for war materials makes it vitally necessary to conserve our natural resources, and especially our coal supply. A KOPPERS by-product coke plant will produce the highest possible yields of coke and will recover from every ton of coal carbonized, 5500 to 6500 cu. ft. of gas, 6 to 11 gallons of tar, 18 to 25 lbs. ammonium sulphate, and 1½ to 3½ gal. of benzols, both coke and by-products being of the best quality.

H. KOPPERS COMPANY
Pittsburgh, Pa.

Say you saw it in THE IRON TRADE REVIEW

THE IRON TRADE REVIEW

Vol. LXI Cleveland, July 19, 1917 *No. 3*

Price Fixing Talk Checks Market

Buyers Hesitate to Make Further Commitments Until Question is Settled Whether They Will Share With Government on Agreed Prices—Waiting Market Generally Continues—Huge New War Plans Are Unfolded

WHILE Washington labors with the intricacies of price regulation, the iron and steel market continues to present the appearance of suspended animation. New business, except for government requirements, direct or indirect, has been held up largely. Similarly, the upward climb of prices has been stayed. Conferences of the week between the representatives of the steel industry and the government apparently have settled the method by which price determination is to be made. No conclusive answer, however, yet has been given as to the extent of the application of the agreed price. Whether or not the open trade is to share with the government the benefit of lower prices is the crux of the situation from a market standpoint. Until the facts are known positively as to what will be done and how it will be carried out, the prevailing uncertainty and hesitation among consumers promise to be prolonged.

Reselling in Bessemer Iron

Buyers of pig iron see no incentive to place further orders under present uncertainty and the volume of sales remains greatly shrunken. There is no pressure to sell, however, except in the case of bessemer, where the export decree now effective has forced back some iron on the market. This has involved metal in brokers' hands and its effect also has been communicated to one or two furnaces. Several thousand tons of bessemer have been sold at $55, valley, and lower is reported to have been done by middlemen who originally purchased the iron around $50. The larger producers have made no change in their price schedules. The market apparently will be called upon to absorb some tonnage while the export readjustments are being made. In the east, Lebanon low phosphorus iron has been done under the previous quotation. Other grades exhibit firmness and the general aspect of the market is one of steadiness. Further sales of basic have been made at $55, valley, for this year, and at $53 for first half. A small lot of lake foundry went at $60, furnace. With consumers so well covered and producers booked ahead heavily, the market apparently is in a strong position to face an indefinite waiting period. Some consumers have raised the question whether they will be protected against decline on orders now being placed, in the event of government regulation bringing about a lower open price. The 10,000 tons of direct government requirements have not been placed definitely, but makers have been canvassed on the matter of price and division.

War Plans Grow Weekly

Government war plans all point to the absorption of a tremendous iron and steel tonnage. Such plans as already have been well matured or those which are in a preliminary stage show a series of gigantic undertakings in which chief dependence is being placed on the iron and steel industry. The manner in which huge enterprises are being brought forth weekly emphasizes the unstable character of any estimates as to what portion of the country's capacity finally will be absorbed. Steel in tremendous quantities is to be called for by great outlays for artillery, immediate naval building, aeronautical construction and the construction of two government shipyards to furnish 2,000,000 tons of merchant shipping. An interesting development in the finished steel market is the effort of the leading wire producer to stabilize prices at its present schedule and to encourage a resale quotation by jobbers not to exceed 50 cents over the mill figure.

Scrap and Coke Lower

Scrap and spot coke have continued to decline steadily. Old material reductions in the week have ranged from $1 to $5 in all districts. The total drop in heavy melting steel in Pittsburgh territory is placed at $10. Spot coke is down to $11.50, or $5 under its maximum point two or three weeks ago. Car supply has been raised to 100 per cent, but labor shortage prevents the full output of the ovens from being obtained.

THE OPEN HEARTH

Problems of Price Regulation

GOVERNMENT price regulation now manifestly moving toward a definite conclusion, represents one of the most important and intricate problems which American industry has been obliged to face in many years. No matter what form or extent the federal supervision or control finally may assume, sweeping readjustment of normal commercial relations are inevitable. That the government at war should obtain such essentials as iron and steel in the magnitude required at prices which permit of fair but not inordinate profits, is scarcely a debatable proposition. Manufacturers, provided they receive equal treatment, hardly can expect more from the standpoint of nation-wide justice. Industry should be a nation's chief bulwark in war and be utilized to the fullest power for the protection and preservation of all. Its minimum and just desert, however, is the sustained power to maintain itself properly, to continue normal growth and to be able to make an adequate return on the capital invested. Anything less would be subversive of sound economic principles. The nation in the end would be the most damaged. It is gratifying that the President has enunciated his adherence to a policy of fair remuneration for productive effort and management.

The government's requirements being assured, on whatever terms it may conclude are equitable, the most vital commercial aspect of price control concerns the outside market or that which is determined by the free play of the law of supply and demand. It is obvious if the government regulation of iron and steel ends with its own necessities, the restricted tonnage that remains to be offered, will be such as to intensify competition among private buyers especially since supplies already have been proven inadequate to meet the total demand. Such a condition spells a sharp bidding up of prices already pyramided to unparalleled heights.

The alternative to this situation is a governmental control of prices applying to all transactions, federal or private. From the utterances of the President and other officials, apparently such a plan is in contemplation. Full market domination, however, means even greater complications. The most far-reaching and important of these is the question whether or not unfilled orders will be molested. Many of these are at prices far above any general level the government may determine. Will the buyers who have sought to be forehanded in covering for distant delivery at the market, to assure themselves of supplies be penalized for so doing as against those who took their chances by refusing to buy? If Secretary Lane's proposal in the fixing of coal prices sets a precedent, such is likely to be the case. Secretary Lane specifically stated that an agreed price on coal would not be retroactive and would apply only to business after July 1. If this doctrine is applied to iron and steel, will buyers, especially in finished material, specify against contracts made at prices above the controlled market? Will it be possible to all practical ends, to enforce the higher priced commitments at all? In this last connection it is probably true that the industry never has had so few open contracts in hand as at present.

Any way a suspension of supply and demand, whole or partial, may be viewed, perplexing consequences are shown. Precedent offers no guidance whatever. The iron and steel industry is moving toward new and unknown ground. Much depends upon the spirit in which the inevitable readjustments are approached. This applies alike to government, to producer and to consumer. Team play, about which so much has been said lately, is about to receive its severest test.

Industry's Heavy War Burden

THAT tremendously increased demands are to be made upon the steel and allied industries by the government is evident from new programs under way. Vast military operations which are necessarily being given only scant publicity are in contemplation. It will call for the best possible industrial effort to meet the huge requirements now being rounded into concrete shape. No doubt these plans, some of them of an extremely confidential nature, were discussed fully at the two-day conference last week between steel manufacturers and representatives of the government. When this is kept in mind it is not difficult to believe that the producers were assured fair treatment. Such consideration by the government is absolutely necessary if they are to be mobilized on a sound war footing.

Eliminating the extremely heavy tonnages of structural material that the merchant shipbuilding program calls for and the great output of projectiles that has been determined upon, there yet remains extensive undertakings of large proportions. Their successful conclusion rests upon the ability of the machine tool industry, the steel industry, the foundries, the automobile plants and associated organizations to fully meet the gigantic burden thrust upon them. That can be done only with the complete co-operation of the government. An idea of what is in prospect is vividly given by the fact that a great artillery program involving the expenditure of $3,000,000,000 is provided for in the general deficiency appropriation measure taken up this week by the house committee on appropriations. Of this vast total, approximately $2,000,000,000 is asked for guns and ammunition and other artillery equipment. It is anticipating the

THE OPEN HEARTH

event of another call for 1,000,000 men to go to Europe.

This measure will carry estimates for the financing of plants to make munitions. The government, according to plans unofficially communicated to private enterprises, realizes it must finance them, because the equipment needed will be of little or no use to the latter when peace is restored. The government no doubt will take over the equipment after the war. The equipment item alone calls for $9,500,000 for machinery to manufacture rifles wanted by the war department. The largest single item is that by Secretary of the Navy Daniels for $100,000,000 for immediate naval building. This would permit a rush job on destroyers, power boats, and other craft urgently needed. The next largest item is $45,000,000 for naval aviation. The war department's aviation bill, a separate measure, calls for an expenditure of $640,000,000 for the construction of 22,000 machines. These items, together with those entering into the tremendous shipbuilding program, which, among other things, calls for the building of two government yards, with a capacity of 400 steel ships in 16 or 24 months, furnish a strirring picture of what the steel and allied industries have before them. It is impossible to say how much of the capacity of these industries will be required by the government but it will be a larger portion than hitherto has been imagined.

These industries will measure up to their task, immense as it is, if given a fair chance. This means the government must co-operate liberally. It signifies the casting aside of all shackling restraint of which too much has been heard in congress and in certain administration departments.

Striking at the Parasite

EFFECTIVE blows are being struck by American industry in solidly welding together the strained links of patriotism of the nation's foreign-born population. Efficacious plans have been evolved by many manufacturers in arousing the alien mind to the importance of a unified English-speaking citizenry of native and foreign born. An Americanization plan conducted by an eastern manufacturer, that has received warm commendation included a survey of the personnel of the entire organization; a letter to each alien, in an endeavor to stimulate his initiative to a formal application for citizenship; a personal explanation from laggards, and finally, classes in the fundamentals of English and citizenship, followed by personal help in aiding aliens to apply for naturalization papers. Other manufacturers have approached the problem from a different angle by holding patriotic exercises of various sorts and by otherwise stimulating patriotic sentiment by means of bulletins or communications published in the native tongue of alien employes. Convincing proof of the practicability of American ideals is found in the employment of a housing expert, by a corporation in the middle west, for the solution of the housing problem of those of foreign extraction. The splendid work of the iron and steel and other manufacturers in instructing the foreign-born in the true significance of citizenship should in time be effective in wiping out the parasite that has lived on the organism of American industry, claiming a home on foreign shores and an allegiance to a foreign flag.

Where War Has Brought Efficiency

A STRIKING example of the tangible results of intelligent and well-directed co-operation to eliminate or ameliorate the war-born problems of industries is afforded by the big reduction in car shortage following the suggestions offered by the railroads' war board. During the month of May the shortage of freight cars in the United States was reduced from 148,627 to 105,127 cars, a reduction of approximately 30 per cent. This marked decrease in one month following a period of four months of alarming increase may be attributed largely to the commendable response of both railroads and shippers to the recommendations of the war board toward securing the maximum effectiveness of existing equipment. Reports of the American Railway association show the shortage on March 1 as 130,082; April 1, 144,797; and on May 1, when the board was just inaugurating its plan to operate all the railroads as a continental system as a means of obtaining maximum national transportation efficiency, the shortage had mounted to 148,627 freight cars. Thus a situation that rapidly was becoming increasingly serious has been tremendously improved through the achievement of co-operation.

An agreement to pool their cars at New York, Philadelphia, Baltimore and Hampton Roads by shippers of tidewater bituminous coal will effect a saving equivalent, approximately, to 133,000 cars a year. This arrangement was accomplished through the co-operative efforts of the council of national defense and the railroads' war board. Operators and dealers for the time being have sacrificed trade names which it has cost them much time and money to establish; but coal will not be stored in freight cars until one shipper accumulates a full cargo of his own special grade. The use of a large number of freight cars thus will be saved. The same plan is being pursued in coal shipments on the Great Lakes. It represents a lesson in efficiency and conservation of facilities which it is to be hoped will outlast the war.

Iron and Steel Prices

Corrected to Wednesday Noon

SCRAP, WAREHOUSE AND IRON ORE PRICES ON PAGE 160

PIG IRON

(Delivery this year.)

Bessemer valley	$57.00 to 58.00
Bessemer, Pittsburgh	57.95 to 58.95
Basic, Pittsburgh	52.95 to 55.95
Basic, eastern Pa.	50.00
Basic, Buffalo	53.00 to 55.00
Malleable, Pittsburgh	55.95 to 58.95
Malleable foundry, Chicago.	55.00
Malleable foundry, Phila.	56.00 to58.00
Mallealble foundry, Buffalo..	53.00 to 55.00
No. 1X Phila.	56.00 to 58.00
No. 2 foundry, Pittsburgh...	55.95 to 58.95
No. 2 foundry, Cleveland....	55.00 to 56.00
No. 2 foundry, Ironton.....	55.00
No. 1 foundry, Chicago.....	56.00
No. 2 foundry, Chicago.....	55.00
No. 2X foundry, Phila.....	55.50 to 56.00
No. 2X foundry, N. J. tide..	55.75 to 56.25
No. 2X foundry, Buffalo....	53.55
No. 2 plain, Philadelphia....	55.00 to 55.50
No. 2 plain, N. J. tide.....	55.25 to 55.75
No. 2 plain, Buffalo.....	52.54
No. 2 southern, Birmingham.	45.00 to 46.00
No. 2 southern, Cincinnati...	48.90 to 50.90
No. 2 southern, Chicago....	50.00 to 54.00
No. 2 southern, Phila. del...	52.00 to 53.00
No. 2 southern, Cleveland...	49.00 to 52.00
No. 2 southern, N. Y.....	51.75 to 52.75
No. 2 southern, Boston.....	52.50 to 53.50
No. 2 south. interior, N. E..	53.00 to 54.00
No. 2 southern, St. Louis...	51.40 to 53.40
Virginia No. 2X, furnace...	52.00 to 53.00
Virginia, No. 2X, Phila.....	54.75 to 55.75
Virginia, No. 2X, Jersey City	55.00 to 56.00
Virginia, No. 2X, Boston...	55.25 to 56.25
Gray forge, eastern Pa.....	50.00 to 52.00
Gray forge, Pittsburgh.....	52.95 to 53.95
Gray forge, Birmingham.....	38.00
Silveries, 8 per cent, furnace	80.00 to 85.00
Silveries, 8 per cent, Chicago	85.00 to 92.50
Low phos. standard, Phila..	92.00 to 93.00
Low phos. Lebanon furnace.	83.00 to 85.00
Low phos., Pittsburgh.....	82.00 to 85.00
Charcoal, Superior, Chicago..	59.50 to 62.00
Charcoal, Superior, Buffalo..	55.00 to 60.00
Charcoal, Birmingham	45.00 to 50.00

COKE

(At the ovens.)

Connellsville furnace	$11.50 to 12.00
Connellsville furnace, contract	10.00
Connellsville foundry, contract	12.50
Connellsville foundry	13.00 to 13.50
Wise county furnace, contract	7.00 to 9.00
Wise county foundry, contract	8.00 to 10.00
Pocahontas furnace, contract.	7.00 to 9.00
New River foundry, contract.	10.50 to 11.00
New River furnace, contract..	7.50 to 10.00

FERRO ALLOYS

Ferro manganese, prompt	$415.00 to 430.00
Ferro manganese, last half	375.00 to 400.00
Spiegeleisen, 20 per cent furnace remainder of year....	85.00
Ferrosilicon, 50 per cent, Pitts.	225 to 250
Ferrosilicon, 50 per cent, Pitts., 1st quarter	130.00 to 150.00
Bessemer ferrosilicon, 9 per cent..	$94.00
Bessemer ferrosilicon, 10 per cent..	95.00
Bessemer ferrosilicon, 11 per cent..	97.50
Bessemer ferrosilicon, 12 per cent..	100.00
Bessemer ferrosilicon, 13 per cent..	105.00

Ferrosilicon prices at Ashland, Ky., Jackson and New Straitsville, O., furnaces.

SEMI-FINISHED MATERIAL

BILLETS

Open hearth, Pittsburgh..	$100.00 to 105.00
Open hearth, Philadelphia..	100.00 to 110.00
Open hearth, Youngstown..	100.00 to 105.00
Bessemer, Pittsburgh	100.00 to 105.00
Bessemer, Youngstown	100.00 to 105.00
Forging, Pittsburgh	115.00 to 125.00
Forging, Philadelphia.....	120.00 to 125.00
Forging, Chicago	100.00

SHEET BARS

Open hearth, Pittsburgh...	$105.00 to 110.00
Open hearth, Youngstown..	105.00 to 110.00
Open hearth, Cleveland....	110.00
Bessemer, Pittsburgh	105.00 to 110.00
Bessemer, Youngstown	105.00 to 110.00

WIRE RODS, MUCK BAR, SKELP

Wire rods, Pittsburgh.....	$95.00 to 105.00
Muck bar, Pittsburgh.....	85.00 to 90.00
Grooved skelp, Pitts., nom..	4.00c to 4.50c
Sheared skelp, Pitts., nom...	4.50c to 5.00c

SHAPES, PLATES AND BARS

Structural shapes, Pitts...	4.50c to 6.00c
Structural shapes, Phila...	4.659c to 5.159c
Structural shapes, N. Y...	4.669c to 5.169c
Structural shapes, Chicago	6.19c
Tank plates, Chicago.....	10.19c
Tank plates, Pittsburgh...	9.00c to 10.00c
Bars, soft steel, Pittsburgh.	4.00c to 5.00c
Tank plates, Philadelphia.	9.159c to 10.159c
Tank plates, New York..	9.169c to 10.169c
Bars, soft steel, Chicago..	4.50c
Bars, soft steel, New York	4.669c to 4.919c
Bars, soft steel, Phila.....	4.659c to 4.909c
Cotton ties, Pitts., June....	$2.10
Bar iron, Chicago.....	4.50c to 5.00c
Bar iron, Philadelphia.....	4.659c to 4.909c
Bar Iron, Cleveland.....	4.50c to 5.00c
Bar iron, New York.....	4.669c to 4.919c
Bar iron, Pittsburgh.....	5.00c
Hard steel bars, Chicago..	4.25c to 4.50c

RAILS, TRACK MATERIAL

Angle bars, Pittsburgh, base	3.25c to 3.75c
Angle bars, Chicago, base...	3.25c
Standard bessemer rails, mill.	$38.00
Stand. open hearth rails, mill	40.00
Light rails, 25 to 45 lbs., Chic.	75.00
Light Rails, 25 to 45 lbs., Pitts.	75.00 to 85.00
Relayers, standard, mill.....	38.00 to 40.00
Relayers, light, Chicago.....	60.00
Relaying rails, light, St. L..	58.00 to 62.00
Spikes, railroad, Pittsburgh..	4.75c to 5.00c
Spikes, railroad, Chicago....	4.25c to 4.50c
Track bolts, Pittsburgh.....	5.50c to 8.00c
Track bolts, Chicago.....	5.25c to 5.50c
Tie plates, Chicago.....	$70.00 to 75.00

WIRE PRODUCTS

(To jobbers; retailers 5 cents more.)

Wire nails, Pittsburgh.....	$4.00
Coated nails, Pittsburgh.....	4.00
Plain wire, Pittsburgh.....	3.95
Galvanized wire, Pittsburgh...	4.65
Polished staples, Pittsburgh...	4.15
Galvanized staples, Pittsburgh.	4.85
Barb wire, painted, Pittsburgh.	4.15
Barb wire, galvanized, Pitts...	4.85
Cut nails, Pittsburgh.....	4.50

CHAIN, PILING, STRIP STEEL

Chain, ⅜ in. proof coil, Pitts.	7.50c
Sheet piling, base, Pittsburgh	4.00c to 5.00c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100 inch and heavier, base per 100 pounds, 9.00c to 9.50c.

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SHEETS

(In cents per pound.)

SHEET MILL BLACK.

No. 28, open hearth, Pitts.	9.00c to 9.50c
No. 28, bessemer, Pitts...	9.00c to 9.50c
No. 28, open hearth, Chgo.	9.69c

TIN MILL, BLACK

No. 28, open hearth, Pitts.	9.00c to 9.50c
No. 28, bessemer, Pitts....	9.00c to 9.50c

GALVANIZED

No. 28, open hearth, Pitts.	10.25c to 11.50c
No. 28, bessemer, Pitts...	10.25c to 11.50c
No. 28, open hearth, Chgo.	11.19c

BLUE ANNEALED

No. 10, open hearth, Pitts.	8.50c to 9.00c
No. 10, bessemer, Pitts...	8.50c to 9.00c
No. 10, open hearth, Chgo.	9.69c
No. 10, open hearth, Phila.	8.659c to 8.909c

TIN PLATE

(Per 100 lb. box.)

Tin plate, coke base, nom..10.00c to 15.00c

IRON AND STEEL PIPE

(Prices adopted June 18, 1917.)

Steel

Diameter in inches.	Black. Per cent off.	Galv. Per cent off.
¼ to 3, butt	42	28½

Iron.

(Prices adopted June 30, 1917.)

Diameter in inches.	Black. Per cent off.	Galv. Per cent off.
¼ to 1½, butt	33	17

BOILER TUBES

(Price adopted April 2, 1917.)

Steel, 3½ to 4½ inches, l. c. l.	34
Iron, 3½ to 4½ inches, l. c. l.	28

CAST IRON WATER PIPE

(Class B Pipe.)

Four-inch, Chicago	68.50
Six-inch and over, Chicago..	65.50
Four-inch, New York.....	68.50
Six-inch and over, New York	65.50
Four-inch, Birmingham	58.00
Six-in. and over, Birmingham	55.00

Class A pipe is $1 higher than Class B.

HOOPS, BANDS, SHAFTING

Hoops, Pittsburgh	6.00c to 6.50c
Bands, Pittsburgh	6.00c to 6.50c
Shafting, Pittsburgh, carloads	5 off to list

RIVETS

Structural rivets, Pittsburgh.	5.25c
Boiler rivets, Pittsburgh....	5.35c
Tinner's rivets, Pittsburgh.....	40 off

NUTS AND BOLTS

(Delivered within 20-cent freight radius.)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter.)

Rolled thread	35
Cut thread	30 and 5
Larger or longer	20

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts.)

Rolled thread	40
Cut thread	35
Larger and longer	25
Cold pressed, semi-finished, hexagon nuts	50 and 5
Gimlet and cone point lag bolts.	40

NUTS

Hot pressed, square, blank.....	$1.90 off
Hot pressed, square, tapped.....	1.70 off
Cold pressed, square, blank.....	1.25 off
Cold pressed, square, tapped.....	1.00 off
Hot pressed, hexagon, blank.....	1.70 off
Hot pressed, hexagon, tapped....	1.50 off
Cold pressed, hexagon, blank....	1.25 off
Cold pressed, hexagon, tapped....	1.00 off

Prices Present and Past

(Yesterday, a month ago, three months ago and a year ago.)

Quotations on leading products July 18, average for June, 1917, average for April, 1917, and average for July, 1916. Prices are those ruling in the largest percentage of sales at the dates named.

	Prices July 18, 1917.	Average prices June, 1917.	April, 1917.	July, 1916.
Bessemer pig iron, Pittsburgh..	$57.95	55.20	42.20	21.95
Basic pig iron, Pittsburgh.....	52.95	50.20	39.70	18.95
No. 2 Foundry pig iron, Pitts..	55.95	51.02	39.95	19.45
No. 2 Foundry pig iron, Chgo..	55.00	51.00	39.25	19.00
Lake Superior Charcoal, Chicago	59.50	51.80	42.20	19.75
Malleable, Chicago	55.00	50.50	39.00	19.50
Southern No. 2, Birmingham...	46.00	35.75	24.50	15.00
Southern Ohio No. 2, Ironton..	54.00	38.60	33.00	18.50
Basic, eastern Pa.....	52.00	46.375	38.25	19.25
No. 2X Virginia, furnace.....	52.50	46.50	38.25	18.50
No. 2X foundry, Philadelphia..	55.50	47.50	41.50	20.00
Ferro mang., delivered.....	425.00	431.25	360.00	175.00
Bessemer billets, Pittsburgh....	100.00	93.75	72.50	40.00
Bessemer sheet bars, Pittsburgh	100.00	101.25	72.50	40.00
Open hearth sheet bars, Pitts..	105.00	101.25	72.50	40.00
Open hearth billets, Pittsburgh.	105.00	93.75	72.50	40.00
Steel bars, Pittsburgh.....	4.00	3.62	3.38	2.50
Steel bars, Chicago.....	4.50	4.55	3.54	2.35
Iron bars, Philadelphia.....	4.909	4.259	3.659	2.559
Iron bars, Cleveland, local del'y	5.00	3.50	3.00	2.40

*Seaboard.

	Prices July 18, 1917.	Average prices June, 1917.	April, 1917.	July, 1916.
Iron bars, Chicago mill.....	4.50	4.00	3.19	2.35
Beams, Chicago	6.19	4.65	3.80	2.69
Beams, Pittsburgh contract.....	4.50	4.00	3.46	2.50
Beams, Philadelphia	4.909	4.659	4.659	2.659
Tank plates, Pittsburgh.....	9.00	4.50	4.50	2.86
Tank plates, Chicago.....	10.19	7.90	4.70	3.09
Tank plates, Philadelphia.....	10.159	9.659	7.159	3.909
Sheets, blk., No. 28, Pittsburgh	9.00	8.13	5.75	2.90
Sheets, blue anld., No. 10, Pitts.	8.50	5.57	5.37	3.00
Sheets, galv., No. 28, Pittsburgh	10.25	9.95	7.56	4.37
Wire nails, Pittsburgh.....	4.00	3.62	3.20	2.50
Connellsville fur. coke, contr...	10.00	8.50	7.25	2.42
Connellsville fdy. coke, contr...	12.50	10.10	7.90	3.15
Heavy melting steel, Pittsburgh.	38.00	40.00	28.10	16.25
Heavy melting steel, eastern Pa.	36.00	36.625	26.00	15.00
Heavy melting steel, Chicago...	34.00	37.00	26.60	14.15
No. 1 wrought, eastern Pa.....	52.50	47.875	40.00	19.75
No. 1 wrought, Chicago.....	40.00	41.75	29.80	13.90
Rerolling rails, Chicago.....	45.00	46.00	31.90	15.70
Car wheels, Chicago.....	37.00	37.00	23.25	12.25

(For Additional Prices See Page 160)

Bessemer Sales Made at Lower Prices

Resale Iron Forced on Market by Export Decree Goes at $55, Valley—Some Furnace Metal Also Offered Lower But Makers Generally Stand Pat—Other Grades Firm—Waiting Market Continues

Pittsburgh, July 17.—The pig iron market in western Pennsylvania has not recovered from disturbances caused by the proposal of the government to regulate prices. Usually well posted market observers, however, are entertaining the hope that federal officials will not attempt to fix prices, except for shipment to the government. If this proves to be the case, the domestic situation likely will adjust itself quickly. Embargoes against the shipment of iron abroad, except under license, and price fixing talk have combined to cause several brokers to offer bessemer at slightly below generally prevailing prices in the valleys. It is reported that about 7000 tons of bessemer were released in the east, when embargoes against exports went into effect. In addition, a southern Ohio blast furnace has offered through brokers several thousand tons of bessemer at about $55, Pittsburgh. One broker has sold 2200 tons of bessemer at a price equivalent to $55, valley, and another interest reports it has sold 4000 tons at the same figure, all for early delivery. On the other hand, leading producers of irons in the valleys are asking $57 to $60. With the exception of these sales, no activity has been noted for a fortnight or longer. The market for basic, foundry and malleable grades is quiet. From 5000 to 10,000 tons of first half basic have been sold at $53, valley, and 5000 tons or more for this year have been closed by a southern Ohio buyer at $55, valley. The Carnegie Steel Co. today blew in an additional furnace at Braddock and now is operating 52 of its 59 stacks.

Dullness is Pronounced

Philadelphia, July 17.—Pronounced dullness now prevails in the pig iron market in this district. Uncertainty over prospective price regulation and other probable government action is the principal cause for the falling off in demand. Most sales now are small and for prompt or nearby shipment. Only a few small blocks of first half foundry have been placed. One of these was for 400 tons of No. 2X by a central Pennsylvania maker at $55, delivered, Wilmington, Del. Only a few new inquiries are up for first half, and none of these calls for more than 500 tons. The inquiry of the Lenoir Car Works, Lenoir City, Tenn., for 6000 tons for first half still is pending. The minimum on eastern Pennsylvania No. 2X is $55, furnace, for this year and $54 for next, although some makers quote $56 for any shipment, and one has named $57 for first half. Sales of small tonnages of 3 to 4½ per cent silicon foundry have been made at from $56.50 to $60, furnace, for nearby shipment. With central Pennsylvania makers the minimum is $54, furnace, for No. 2X for this year and $53 for next. With Virginia makers the minimum is $52, furnace, for No. 2X for this year. The Virginia Iron, Coal & Coke Co. continues to quote $52.50 on first half No. 2X. Considerable resale southern iron has been offered here at $48 and $49, Birmingham, for first half and $48 to $50 for this year, but not much business is reported. One southern maker sold 1000 tons of No. 2 for first half to a Wilkes Barre, Pa., consumer at $48.25, Birmingham, or $53.85, delivered. Sales of copper-bearing low phosphorus during the week included 2000 tons to a Chester, Pa., consumer at $83, delivered, for last half, and a round tonnage to another Chester plant at a slightly higher price. No

basic, bessemer or standard low phosphorus figured in the week's business. Several small tonnages of prompt malleable have been sold around $57 to $59, delivered. Numerous export inquiries are out.

Want Benefit of Reduction

New York, July 17.—A long time has elapsed since demand for pig iron in this district has shown such a pronounced dullness as at present. This development appears to be due almost entirely to uncertainty over the methods by which the government proposes to control prices. Consumers are keenly interested in the possibilities of the situation, and several prospective buyers of small tonnages have asked the furnaces in submitting quotations to assure them the benefit of any reduction in prices which might result from government regulation. Such requests have not been accepted by the furnaces. The present breathing spell is welcome to the furnaces, since nearly all of them for some time past have been averse to adding to their present large bookings. Due to the unparalleled statistical strength of the market, no unsettlement of values is regarded as likely to grow out of the present waiting period. On such small business as has been done in foundry during the past week prices have advanced further. The minimum on eastern Pennsylvania No. 2X now is $55, furnace, for this year and $54 for next, or $1 higher than a week ago. In most cases sellers are asking $56 and $57 for this year and are not inclined to quote concessions for next year. Practically all of the business of the week was in small tonnages for early shipment. Bookings for next year included only a few moderate-sized tonnages. Quotations on Buffalo iron largely are nominal. One Buffalo interest quotes No. 2X at $57 to $58 for this year and $55 for next, and another $55 on first and $53 on second quarter.

General Electric Tonnage Unplaced

Buffalo, July 17.—From the viewpoint of the buyers the market is not quite so active this week. Inquiry keeps up fairly well despite the knowledge on the part of buyers that placement must necessarily be light, as there is very little metal to be sold. Bookings for the past week have not been more than 3000 tons in this district. Lack of sufficient output forbids producers quoting on 75 per cent of the inquiry. So far as can be learned the inquiry of a large electrical interest which has been before the market recently has not been placed. This inquiry was for about 15,000 tons, and it is altogether probable that uncertainty regarding future conditions combined with present low output were responsible for the furnaces not interesting themselves in this business. Furnaces, generally speaking, are not anxious to quote for far future deliveries, though a considerable portion of 1918 already is under contract. One interest declines to quote on 1918 iron till after Nov. 1. There is still a great scarcity of 1917 iron and such small tonnages as are obtainable have a price range of $55 to $58. Charcoal iron for this year's delivery is very scarce.

Buyers Look to Washington

Cleveland, July 17.—Buying activity continues at a low stage generally as buyers are holding off until the talk of government regulation assumes definite form. Producers see no reason to push sales. On the other hand, one or two sellers have done more business this week than at any time this month. This business has been well scattered geographically and in grades. Prices are firm except in bessemer, where there have been manifestations of easiness due chiefly to resale offers. A lot of 7000 tons of bessemer originally sold for export was reoffered at $57, Cleveland, this week. There is some demand for prompt iron which has been stimulated by further falling back of southern deliveries to this territory. On prompt No. 2 foundry $57, valley, was quoted. Some purchases of prompt Virginia were made, however, at $52, furnace, for No. 2X, or $55.20, Cleveland. A small sale of 2 to 2½ per cent silicon for first half was made at $60, lake furnace. Some scattered inquiries for last half of 1918 are appearing, including one in the week for 1500 tons of foundry. A 2000-ton last quarter malleable inquiry for Brantford, Ont., has come out. On 10 per cent silvery $95, southern Ohio furnace, and on 10 to 11 per cent bessemer ferrosilicon $110, southern Ohio furnace, was quoted during the week. A Southern Ohio steelmaker placed 5000 tons of basic for this year at $55, valley.

Waiting for Developments

Cincinnati, July 17.—Absence of inquiry for either foundry or basic iron is not causing much comment. Consumers badly needing iron for spot shipment are conspicuous by lacking. No inquiries for future shipment are out, and the general tendency is to await developments at Washington, although no action is expected that will cause a radical change in the market. The month of July usually is a dull one. Just now everyone is disposed to sit quiet and not contract far ahead. A few inquiries have come to light, but they are not taken seriously. As furnace iron grows scarcer, the usual rumors are circulated of resale iron to be had for shipment this year. Apparently, these are without foundation. The high silicon irons continue to hold their own, but fewer sales are reported. Southern No. 2 foundry prices are unchanged, with most makers asking $50 for spot, and from $47 to $50, Birmingham, for first half business. Confirmation cannot be obtained of the withdrawal from the market of a southern producer, who was willing to take on business last week at $45, Birmingham, for first half shipment. Northern No. 2 foundry is quoted at $55 to $56, Ironton, with little to be had for this year.

Buyers Are Less Eager

St. Louis, July 17.—The market for pig iron is quieter than in many weeks and the general feeling is easier. Actual price variations are slight, but the recent anxiety on the part of consumers to acquire iron at all costs has subsided. The principal factor in the change is to be found in the government price situation. Another important influence, according to St. Louis dealers and consumers, is an underlying belief that peace is not so far distant. There has been no halt in the heavy consumption, but less certainty is felt relative to new business after present orders have been disposed of. Some dealers report concessions have been secured. It is certain, however, that this is the first time in weeks when prices quoted are not higher than the last previous quotations. This is taken by observers to indicate that the crest of the movement may have been passed. Inquiries during the week were less numerous, and in lighter volume. Labor difficulties in various directions have figured in the situation, and some improvement in transportation has served to lessen apprehension relative to supplies. One lot of 1500 tons of No. 2 southern foundry iron was sold to a dealer here at $48, Birmingham, for delivery over the next three months. Otherwise, however, nothing under $50 is heard of, and some fair sales were made at that figure.

Chicago Sales Fall Off

Chicago, July 17.—A general falling off of sales of all grades of pig iron has characterized the Chicago market during the past week. The market is dormant with the exception of the few sales of carload lots for immediate delivery. Continued inquiries for silveries are being received, but little of this grade is available and no sales have been consumated. Southern iron for 1917 delivery is

almost impossible to obtain as makers' books are full. Only occasional lots of small tonnages will be available for the remainder of the year. Some Tennessee iron, however, is obtainable for delivery before January, 1918. It is understood that a fair amount of southern iron for 1918 first half delivery is offered at $48, Birmingham. Southern iron for this year is quoted at $50, Birmingham. Quotations on northern foundry and steel-making grades have not been changed.

Little Buying in South

Birmingham, July 17.—Manufacturers of pig iron in the southern territory attach no significance to the present lull in buying. Despite reports from other centers that some iron has been sold in the south under the published quotations, inquiry fails to elicit where there is any selling worthy of mention being done at all, and $48 for No. 2 foundry for delivery next year, is the scheduled price. Miscellaneous sales of basic, low silicon and special brand or special analysis iron for this year continue to be made at prices ranging from $50 to $51.50. There is a steady reduction of the accumulated stock of iron on furnace and warrant yards. Not much more than half a month's make is on the yards in the Birmingham district. An additional furnace is now making iron in this district and resumption of another is scheduled for the next week or ten days. The Trussville furnace is expected to be in blast before Sept. 1. The Vanderbilt furnace of the Woodward Iron Co., now being relined, and the No. 2 furnace of the Shelby Iron Co., which is being repaired, will be in operation this month. The railroads in the Birmingham district have given notice that an increase of 5 cents per ton on furnace raw material will be made this month. While there will be a protest by the furnace companies, the new rate does not exceed the amount allowed by the state public service commission.

Ferro Competition Grows

Increased Pressure to Sell Brings Easier Conditions—Large Tonnage of Ferrosilicon is Wanted for Export

New York, July 17.—Increasing competition to sell ferromanganese has resulted in a considerably easier tone in the market. Carloads for prompt and nearby shipment have been sold at $400, delivered. Last quarter metal has been sold at $375 and first quarter at $350. These figures now indicate the market on domestic metal. Sales have been made in fair number during the week, but no large tonnages have been involved. Only one sale of English ferromanganese has been made; this was for a small tonnage for November shipment at $400. New inquiries in the market are small.

Inquiry for spiegeleisen shows an improvement. The biggest single inquiry is for 1500 tons for export over the last half. Several sales of spiegeleisen for domestic consumption have been made at $85, furnace, for last half. A number of inquiries are in the market for first half. First half is quoted at $74 to $75, furnace.

Fifty per cent ferrosilicon has been featured by numerous sales, none, however, for large tonnages. This business has been done around $225, delivered, for this year, and $130, delivered, for first half. The Bethlehem Steel Co. recently closed for a large tonnage of 11 per cent bessemer ferrosilicon. A South American country recently put out an inquiry for 4500 tons of 14 to 17 per cent bessemer ferrosilicon and for 300 to 500 tons of 50 per cent ferrosilicon.

Some Alloys Lower

Pittsburgh, July 17.—Quotations on 80 per cent ferromanganese have receded slightly. For prompt shipment, carload lots recently have been offered at $400 to $425, delivered. For shipment in the fourth quarter, as low as $375 has been quoted and even lower figures have been named for delivery in the first quarter of 1918. Domestic production soon is to be increased by the blowing in of the Ariskany, Va., furnace on ferromanganese. The market for 50 per cent ferrosilicon also is easier. For shipment in 1918, $135 and for delivery this year $225 have been quoted. Those figures are $15 and $25, respectively, below previously prevailing prices. Lower grades of bessemer ferrosilicon, on the other hand, reflect strength. Some dealers are asking $105, furnace, for 10 per cent, and actual sales have been made at $95, furnace; reports of sales at $100 are heard.

Ferrosilicon Inquiry Pending

Chicago, July 17.—An inquiry for a fair tonnage of ferrosilicon has been received by sellers in the Chicago market. This transaction probably will be closed this week. An offer of $105, furnace, for several hundred tons of 11 to 12 per cent bessemer ferrosilicon has been made. This offer was not accepted by the furnace, as the figure is somewhat lower than prevailing market prices. Spiegel has been unusually quiet during the past week and few inquiries have been received.

Wide Range

Shown on Prices for Tubular Goods—National Lists Unchanged

Pittsburgh, July 17.—The market for steel tubular goods is similar to that for wire products. The National Tube Co. has made no formal changes in its prices on standard steel pipe since President Wilson on April 2 asked congress to declare war upon Germany. Two separate advances, one of $12 a ton made on May 1, and one ranging from $14 to $26 a ton on June 15, subsequently have been effected by independent mills. Heavy tonnages have been sold at prevailing maximum prices. The general market has been almost at a complete standstill for a fortnight, and it is not likely that any great activity will be noted until it is known definitely what steps will be taken with reference to prices to be established by the government. Demand for line pipe, boiler tubes and seamless tubing is exceedingly heavy. Huge quantities of boiler tubes are entering the manufacture of merchant, marine and locomotive boilers, and tremendous quantities of seamless tubing are being used by companies supplying the government with hospital beds and cots. Orders for 50,000 steel cots recently were distributed by the government.

Lodge & Shipley Elect

The Lodge & Shipley Machine Tool Co., Cincinnati, has announced the election of new officers of the company. It was stated in the July 12 issue of THE IRON TRADE REVIEW that Murray Shipley, formerly vice president, had severed his connections with the Lodge & Shipley Machine Tool Co. M. G. Lodge has been elected president, J. W. Carrel, vice president and general manager, and L. A. Hall, secretary-treasurer. J. W. Carrel has indicated that the policy and organization of the company will be the same as heretofore.

Establishes 8-Hour Day

The H. C. Frick Coke Co., a subsidiary of the United States Steel Corp., has made some minor changes in working schedules, effecting its mine and coke oven employes in western Pennsylvania. An 8-hour day has been established by the Frick company, so far as possible.

Building Awards Decline

June Lettings Only 47½ Per Cent of Shop Capacity—Substitute War Tonnage For Unshipped Commercial Orders

New York, July 17.—The greatly reduced volume of structural steel awards is reflected by the monthly report of the Bridge Builders and Structural society, which shows that June contracts amounted to but 47½ per cent of the entire capacity of the country. This is equivalent to 85,500 tons, compared with 56½ per cent, or 102,000 tons in May.

Monthly reports of percentages of capacity and estimated tonnages contracted for during the past year is as follows:

Month.	Per cent.	Approx. tonnage.
June, 1917	47½	85,500
May	56½	102,000
April	61	110,000
March	68	122,000
February	59	106,000
January	61½	119,000
Dec., 1916	86	148,000
Nov.	78	134,000
Oct.	77	133,500
Sep.	52½	99,400
Aug.	64	112,600
July	47½	83,600
June	58	100,000
May	80	137,000

General Goethals' announcement that contracts for the erection of two government plants for the fabrication of 400 steel merchant vessels would be let speedily encouraged impression last week that some of the uncertainty surrounding the structural market would be cleared away. Fresh objections by Chairman Denman of the shipping board to General Goethals' plan, however, has made the uncertainty as to what will be required of the structural industry, as great as ever. New structural projects have been more abundant, due largely to government requirements and needs for industrial plant extensions. Quotations have been asked on several good-sized tonnages for Japan, and Sweden and Holland have inquired on large lots. On this business the mills have not been quoting as far as known. Prices on plain material are unchanged at 4.50c, Pittsburgh, minimum, for shipment at mill convenience, to 5c and 5.25c, Pittsburgh, for small lots for preferred shipment, while one maker continues to take early business at 6c, Pittsburgh.

Heavy Demand for Ship Shapes

Philadelphia, July 16.—Demand for ship shapes again has been of large proportions recently. The largest single inquiry calls for 25,000 tons for export. Numerous shipyards in the east have been in the market for lots of 5000 to 12,000 tons. None of this business has been placed, so far as known. Ship shapes are quoted nominally at 6c to 6.50c, Pittsburgh, although one maker has a minimum of 8c, Pittsburgh. Considerable demand for structural shapes continues to arise out of the needs for extensions and repairs to manufacturing plants and other structures, but these, as a rule, are not large. At the same time, they constitute a total larger than the mills care to take. Most of the mills will accept as little tonage as possible, with the exception of government requirement. The only new government tonnages up are 140 tons for a stable, garage and repair shop at League island navy yards, and 140 tons each for coal-handling bridges at the Norfolk and League island yards. The minimum on plain shapes continues 4.50c, Pittsburgh, for delivery within the next six to nine months. One mill still quotes 6c, Pittsburgh, on tonnages for delivery in three to six months. On small lots for prompt, 4.75c to 5.25c prevails.

Outside Works is Small

Pittsburgh, July 17.—Fabricators are experiencing little new domestic demand. Plants are being driven at capacity on old contracts and on government work. The latter is increasing rapidly. The domestic market likely will continue inactive until after building conditions are more favorable. No change in prices is shown.

Government Seeks More Steel

Chicago, July 16.—Increases during the month of June in building operations including manufacturing extensions and commercial buildings indicate a slight revival. The market has been dormant for some time and continues so at present but it is hoped that some renewal of activity will result. The government continues to place additional contracts for shapes. The leading interest received a large inquiry from the government for structural material last week. Although its mills are working to capacity on orders already placed, it probably will take care of some additional tonnage of the government's requirements. A decline in the number of inquiries from manufacturers using structurals is reported by sellers. It is believed that the high prices have served to check the production of many stable lines.

Unshipped Orders are Affected

Cleveland, July 17.—Practically all of the new inquiries for structural material relate to direct or indirect government work. Some of these are pretty far down the line, as for instance an inquiry for material from a builder of cranes who is supplying an Atlantic coast shipyard now building mine sweepers. Some of the government work is eating into unshipped commercial tonnage in that where consumers have taken war business and want steel quickly, they are obliged to substitute this for an equal amount to their credit on mill books. An inquiry for 1400 tons of shapes for first half of 1918 and covering army truck frames has appeared from a Cleveland manufacturer.

CONTRACTS AWARDED

Shaft sets, stuttles and bearers for Norrie Aurora Mines, Ironwood, Mich., 223 tons to the American Bridge Co.

Structural and machine shop extensions for Illinois Steel Co., 500 tons to the American Bridge Co.

Steel framework for new Bank of Italy, Fresno, Cal., 300 tons to the Central Iron Works.

Extension to plant of Union Carbide Co., Niagara Falls, N. Y., 200 tons, to Lackawanna Bridge Co., Buffalo.

Bridges for Pennsylvania railroad, 100 tons, to Phoenix Bridge Co., and 535 tons to other independent fabricators.

Lawrence street subway station, Brooklyn, 500 tons, to American Bridge Co.

Culver rapid transit extension, Brooklyn, 3800 tons, indefinitely postponed.

Conveying galleries for Northern Central railroad, Baltimore, 1167 tons, to American Bridge Co.

Shaft sets for Oliver Iron Mining Co., Ironwood, Mich., 223 tons, to American Bridge Co.

Bridges for Great Northern railroad, 270 tons, to Wisconsin Bridge Co.

Power house for Staten Island Shipbuilding Co., 250 tons, to independentt fabricator. Machine shop, 550 tons, not yet awarded.

Government magazine buildings and shell houses, Hingham, Mass., 700 tons, to McClintic-Marshall Co.

Government buildings at St. Julian's Creek, Va., 240 tons, to McClintic-Marshall Co.

Buildings at Fort Mifflin, 270 tons, to American Bridge Co.

Buildings for New Jersey Zinc Co., Palmerton, Pa., 1200 tons, to Belmont Iron Works.

CONTRACTS PENDING

Davis theater building, Pittsburgh, about 500 tons.

Stable, garage and repair building, League Island navy yard, 170 tons, Wm. Linker Co., Philadelphia, low bidder.

Key bridge over Potomac river, 650 tons, bids being taken by government.

Coal hopper, additional building and reconstruction of four present buildings at Rock Island arsenal, 400 tons, bids to be opened July 23.

Coal handling bridges at Norfolk and League Island navy yard, 140 tons each, bids to be opened July 23.

Bancroft hall, naval academy, Annapolis, 600 tons, general contract expected to go to

J. Henry Miller and steel to American Bridge Co.

Bridges for Pennsylvania railroad, 650 tons, bids being taken.

Extension to Boston elevated railroad, 400 to 500 tons, bids being taken.

McCreery estate theater, San Francisco, 1700 tons, indefinitely postponed.

Building for General Electric Co., Newark, N. J., bids being taken.

Ore-handling bridges for Buffalo Union Furnace Co., Buffalo, 320 tons, bids being taken by Mead Morrison Mfg. Co.

Government projectile plant, Charleston, W. Va., 2400 tons, Warren Moore & Co., low bidders.

Government magazine buildings, Lake Denmark, N. J., 150 tons, Columbus Circle Construction Co., New York, low bidder.

Building for Toledo Machine Tool Co., Toledo, O., approximately 650 tons, bids being taken.

Yards Await Fixed Price

Shipbuilders Chop Off Inquiry Looking to Government to Arrange Supplies—Export Demand However Rules Strong

Philadelphia, July 16.—Fair-sized bookings marked the eastern Pennsylvania plate market during the week. The largest tonnage placed came for a locomotive builder and requirements of other industries also contributed to the total. A feature of late has been the diminished demand from shipyards, due to the expectation of these interests that supplies of steel for vessels will be taken care of by the government. Numerous export inquiries again have been presented, including one of 25,000 tons. None of the plate mills, so far as known, quoted on this business. It is becoming very difficult to have an order accepted for shipment in less than 11 to 12 months, and the question of delivery is more difficult in view of the heavy specifications now being distributed by the government. These are receiving attention over all other work. All orders taken from the regular trade are with the understanding that they will be executed at such time as the mill can fill them without interfering with government work. The mills have not advanced to figures with which prospective buyers tempt them. An order of tank plates at 11.50c, Pittsburgh, was declined.

Japan Pays 11c for Tank

New York, July 17.—Export demand for plates shows no falling off, and foreign inquiries totalling 10,000 to 25,000 tons are turned away almost daily. Most of this demand is from Japan, but it represents practically all quarters of the globe. Only an occasional tonnage is being booked. One lot of 1000 tons of tank was sold to a Japanese buyer during the week at 11c, Pittsburgh. Higher than this figure was realized on another export lot. Not much difficulty is expected in securing licenses for plates for export, excepting in the countries adjacent to Germany. Licenses this week were secured for shipments to the Argentine, Norway, Japan and other countries. Inquiry for plates for domestic consumption has undergone a material reduction, due largely to uncertainty over prospective government action. A lot of 1000 tons of tank plates was sold to a domestic consumer during the past few days at 10c, Pittsburgh. A metropolitan dealer has been offering limited tonnages of tank plates in certain sizes at 9.75c, Pittsburgh, which is the lowest price noted in some time.

Mills Await Further Call

Pittsburgh, July 17.—Platemakers continue to await further instructions from Washington. Mills in this district, now furnishing about 100,000 tons of ship plates per month, likely will be called upon for 150,000 tons per month before the end of the year. Mill managers are anxious to know what decision federal officials will reach relative to so-called government prices. Many people in close touch with the situation express the belief that the market for finished steel products will adjust itself without guidance by outside sources. Ordinary tank plates continue to sell at 9c and above.

Contract at 10c, Mill

Cleveland, July 17.—Consumers generally are less inclined to buy plates at the prevailing high prices in view of the government regulation talk. Some contract business, however, still is being closed, including one lot of 500 tons for last half at 10c, eastern mill.

Inquiries Fall Off

Chicago, July 17.—Absence of sales of plates during the last week is responsible for continuance of the same market status which has prevailed for some time. Although few sales have been made during the past month, inquiries from manufacturers have been numerous. During the last week, however, even the number of inquiries have decreased. Several interests predict the placing of more orders for plates by the government in the near future. The 10.19c, Chicago, quotation still prevails.

France Inquires

For Big Tonnage of Cast Iron Pipe—Government Orders

New York, July 17.—The most important new development for cast iron pipe is the appearance of inquiries running into thousands of tons for shipment to France, but nothing yet has developed to indicate when this business will be closed. Yonkers, N. Y., has placed an order with the Warren Foundry & Machine Co. for 118 tons of 4 and 6 inch pipe at $69.26, delivered, for the 4-inch, $66.26 for the 6-inch and $105 for the fittings; R. D. Wood & Co. bid $68.80, $65.50 and $112, respectively; J. P. Ryan, $70, $67 and $115; United States Cast Iron Pipe & Foundry Co., $70, $67 and $110. The city of New York is opening bids today on 740 tons of 6, 8 and 12 inch. It now is expected the requirements for the army cantonment sites at Yaphank, L. I., and Wrightstown, N. J., will not be heavy. It is estimated that approximately 700,000 feet of pipe will be required for national guard encampments throughout the country, but it is believed most of this requirement will be filled with wood pipe. Private buying continues fairly good.

Contracts to be Awarded

Chicago, July 16.—Comparative inactivity still prevails in buying of cast iron pipe. The contract by the city of Duluth for 900 tons has been referred to the city council. Dealers expect the contract for 700 tons of pipe for waterworks extensions for a Wyoming municipality to be awarded this week.

Government Orders Received

Birmingham, July 17.—(Special.)—Government contracts are being received by a number of pipe plants, foundries and machine shops, in the Birmingham district. Water and sanitary piping in quantity will be furnished for the cantoments being set up by the government in the south and elsewhere. Cast iron pipe plants are receiving liberal specifications and full operations are continuing. The northwest is to receive during the summer large quantities of cast iron pipe from the Birmingham district.

Buys Pipe for War

Youngstown, July 17.—Orders from the government for 500,000 feet of 4 and 6-inch steel pipe were received the latter part of last week by Mahoning valley mills. This order was allotted among various manufacturers.

The large new plant of the North American Motors Co. at Pottstown, Pa., is expected to be ready for occupancy in September.

Bar Specifications Less

Manufacturing Trade Also Puts Out New Business Less Freely—Want Steel For 30,000 Wagon Tires.

Pittsburgh, July 17.—Specifications against contracts for steel bars have fallen off slightly and scarcely any new demand is reported. Numerous inquiries are pending for bars for the manufacture of shells of various sizes. Agricultural implement makers continue to specify freely, but demand from the automobile trade has fallen off. Steel bars are being held generally at about 4.50c, although some makers are asking as high as 5c.

Inquire for Tire Steel

Cleveland, July 17.—Some inquiries for steel for convoy wagons for the army which were recently placed in large numbers, continue to come out. A buyer in this territory has inquired for the material amounting to approximately 1200 tons for 30,000 tires. This is wanted for delivery this year and the early part of next. Aeroplane construction continues a subject of interest in the trade and it is understood plans are under way to extend the manufacturing capacity of this kind in this territory. Some of the builders of moderate-priced motor cars are enjoying a large business and are planning further extensions. Some makers of concrete bars now are quoting 4.25c to 4.50c, mill, but 4c prices have not disappeared. Cleveland barmakers have advanced to 5c, mill.

Bar Inquiries Shrink

Chicago, July 17.—Scarcely any bars of any kind are available in the Chicago market. Practically no sales have been made within the past week, and mills continue to refuse to accept orders for any delivery. Bar iron remains firm at 4.50c; soft steel bars still are quoted at 4.50c, and hard steel bars are fixed at 4.25c to 4.50c. According to one interest, 4c would be a fair price for hard bars were any of these obtainable. As a result of the continued difficulty in obtaining tonnage which has prevailed during the last three or four weeks, sellers of iron and steel bars report a slight drooping of inquiries from manufacturers.

Shell Bars Are Sought

New York, July 17.—Steel bars share the pronounced lull of all iron and steel products. Consumption continues as heavy as ever, and specifications show no let-up. Consumers, while waiting for government action to develop, are operating on material previously placed. The lull has not affected the prices since the mills have been practically out of the market for a long time past, and welcome the opportunity to catch up to some extent on deliveries. The only new domestic inquiry of consequence is for 6000 tons of 3¼ and 4 inch high explosive shell rounds from a Bridgeport manufacturer. Numerous export inquiries are current. The minimum price on steel bars continues 4.50c, Pittsburgh, for shipment at the mills' convenience. Small tonnages for prompt and nearby are going at 4.75c to 5.25c, Pittsburgh.

Shafting Used for Shells

Pittsburgh, July 17.—Demand for shafting for the manufacture of fuses and shell parts is increasing. Approximately 10 per cent of the capacity of the mills in this district now is being used for war purposes. For shipment at the convenience of the manufacturer, shafting is quoted at 5 per cent off the list to the list.

Rivets Exceedingly Active

Pittsburgh, July 17.—Rivet manufacturers are furnishing tremendous quantities for delivery to shipbuilders, and fancy prices frequently are being paid for prompt delivery. The government, which already has figured in the market on an extensive scale, likely will be the most conspicuous buyer of rivets the remainder of the year. Some of the rivetmakers are understood to have offered to the government a price of 2.25c per pound over the cost of rivet rods. Demand for nuts and bolts is heavy. No formal changes in prices have been made since about April 12.

Chainmakers Are Swamped

Pittsburgh, July 17.—Shipbuilding programs call for heavy tonnages of steel chain. Some makers declare demand at present is heavier than ever before in the history of the industry. Steel chain is being quoted at 7.50c, base, by some makers. Premium prices freely are being offered for prompt shipment.

Distillers Quit Buying

Pittsburgh, July 17.—Distilling interests in all sections of the country have withdrawn from the market for steel hoops. What tonnage previously was being shipped to the distilling trade now is being diverted to other interests. Manufacturers in a position to meet specifications for hoops and bands before the latter part of the year are experiencing no difficulty in selling at 6.50c.

More Shell Steel Sought

Various Buyers Want Tonnage For Additional Munition Orders—Slabs Sell at $110 Delivered in the East

Cleveland, July 17.—A new inquiry for 8000 tons of forging billets for 8-inch army projectiles has been put out in this district. The indications are the Carnegie Steel Co. will furnish the necessary nickeled steel amounting to about 5000 tons for a quantity of 3 and 4-inch gun forgings which have been placed with a local company. There is little or no inquiry for billets or sheet bars from the regular commercial trade.

Slabs Sell at $110

Philadelphia, July 16.—Very little activity has characterized the semi-finished steel market in this district during the week. The only sale of any importance involved 1500 tons of open-hearth slabs, which went to one eastern Pennsylvania consumer at $110, delivered. This figure now generally is the asking price on rerolling billets and slabs. No business has been reported in open-hearth forging billets, on which the nominal asking price now is $125, eastern Pennsylvania; prospects are not displeasing.

$110 Sheet Bars Reported

Pittsburgh, July 17.—Little activity is reflected by the market for semi-finished steel products. An eastern Ohio consumer is reported to have recently paid $110, mill, for a small tonnage of sheet bars. Consumers and sellers generally appear to be awaiting developments at Washington and it is not likely that any change in the situation will be noted until after the proposed price-fixing program is settled. Although nothing

Want Strip for Munitions

Pittsburgh, July 17.—Strip steel makers are being called upon for large quantities of material for the manufacture of cartridge clips and shell parts. Companies working on contracts for the government are experiencing no difficulty in obtaining deliveries. For delivery at the convenience of the maker, strip steel is being quoted at 9c to 9.50c.

Scrap Declines Further

Prices Show General Slump of From $1 to $5 In Practically All Grades. Buyers Hold Off.

Pittsburgh, July 17.—The market for iron and steel scrap, which hit the toboggan a couple of weeks ago, continues uncertain and irregular. Heavy melting steel has declined $10 a ton to $38, delivered. Little buying demand prevails, and talk of $35 steel is heard. The more prominent consumers have not figured in the market for several weeks and dealers are refusing to pay prevailing quotations. No. 1 wrought scrap, turnings, borings and cast scrap reflect moderate strength. Turnings and borings are being held at $25 by several sellers and wrought scrap has sold at as high as $48 for shipment to consumers in the eastern territory. No. 1 cast scrap, demand for which is heavy, is selling at about $37. A railroad embargo against the shipment of scrap to the plant of the Pittsburgh Steel Co., Monessen, Pa., was declared a few days ago.

Metropolitan Market is Easy

New York, July 17.—The entire old material market in this district has an easier tone and there is less business current than at any time for months. Demand even for the grades which only a couple of weeks ago were extraordinarily active, like heavy melting steel and wrought scrap, has fallen away entirely. All grades of scrap now are easy to buy and dealers hesitate in making bids, since almost any reasonable figure they name is snapped up. Declines during the week are $3 to $4 on heavy melting steel, $2 to $3 on city wrought, $3 to $4 on wrought pipe.

Weaker at Cleveland

Cleveland, July 17.—Scrap is weaker in this district, but there is hardly enough general trading being done to establish prices definitely. Heavy melting steel is about $1 lower and is quoted at $37 to $38; hydraulic pressed sheets, which last week were quoted at $36.50 to $37, now are held at $35 to $36; old steel rails over 6 feet, for melting, have been marked down from $37 and $38 to $36 and $37; drop forge flashings over 10 inches are down $1 and are quoted at $33 to $34. All these grades are in gross tons. No. 1 busheling, which was $32 and $33 a net ton, now is quoted at $28 and $30 and is not strong at that figure; cast borings are off about $2 and are held at $19 to $19.50; machine shop turnings are $17.50 to $18.50, or $1 lower. The uncertainty pending price control developments at Washington is reflected in the market. Producers, consumers and dealers are inclined to suspend buying and selling until the atmosphere clears.

Wrought Drops Sharply

Philadelphia, July 16.—Dullness which is in marked contrast to the great activity so recently prevailing, now pervades the iron and steel scrap market. Only a few sales appear to have been made during the week and these generally involved only carload lots. All grades of scrap are easy and dealers are becoming cautious about submitting bids since almost any reasonable figures they name are taken up. As a result the market is weak and sharp recessions have developed on certain grades. The most radical change is No. 1 railroad wrought, consumers of which have withdrawn from the market entirely. The price on this grade has declined fully $5 a ton. Steel shafting has declined about $3 a ton; wrought pipe about $3; heavy cast about $1.50; No. 1 forge and bundled sheets about $2; stove plate around $1 and heavy melting steel and frog switch and guard rails about $2. A large consumer offered to buy considerable heavy melting steel this week at $35, delivered Coatesville, but dealers were not interested.

Prices Drop From $1 to $5

Chicago, July 16.—Sellers of iron and steel scrap in the Chicago market report pronounced inactivity in buying and a general decline in prices. Dealers seem to be adjusting transactions made during the last period of feverish buying and are evidently making preparations for a revival which they expect to take place within the next month or six weeks. The uncertainty among makers of semi-finished and finished steel products in regard to price regulation by the government is reflected in scrap and apparently accounts partly for the present stagnant conditions. Declines on all grades are reported varying from $1 to $5. The marking down of prices does not, however, extend to a general weakness. Approximately 5000 tons of miscellaneous scrap have been offered by the railroads, including 3340 tons offered by the Atchison, Topeka & Santa Fe, 750 tons by the Chicago & Eastern Illinois, 1300 tons by the Missouri, Kansas & Texas railroad, and 8000 feet of 35-pound relayers by the St. Louis & Southwestern.

Market Lull Continues

Buffalo, July 17.—The lull of last week prevails this week, and this has had the effect of decreasing prices in practically the entire list of grades. There is no buying movement on hand and no short sales being made. No surplus of scrap is available. Dealers incline to the belief that the market may rest as it is for the next month or two but will become stronger after the government takes final action in adjusting steel prices. Indications are that prices are not likely to go much lower, because material is scarce. A new buying movement, dealers say, would send prices much higher than they were before. An embargo at one of the big Pittsburgh consuming points is diverting scrap to other points, and this has a tendency to weaken the market.

Supplies are Heavier

Cincinnati, July 17.—Scrap prices have been reduced sharply, although not all grades have been affected. The new demand is very light and as consumers are buying only from hand to mouth, dealers are not disposed to stock up at prices prevailing a week ago. The unsettled condition of the market is attributed to three or four causes, with the probable correct reason being the heavier supply and the lighter demand.

Price Moves Downward

St. Louis, June 17.—Relative quietness has prevailed in the market for iron and steel scrap. Although very little material is being offered, the trend of prices is downward. Actual transactions were the smallest for any single week since the recent upward movement started. The price list shows a few minor reductions in prices, but owing to uncertainties and possibilities, dealers are not disposed to press things on the selling side. The volume of short selling has been insignificant. Consumption in this district continues on a large scale. An extensive tonnage of old material recently has been shipped from this district to eastern points, and into the Pittsburgh district. New offerings have failed to equalize this loss. During the past week offers by the railroads aggregated only a few hundred tons, and virtually nothing came from the country. Relaying rails have not been affected by the

slump. The demand for this grade is so brisk, and available supplies so light, that holders are asking higher prices.

Prices Drop Generally

Birmingham, July 17.—The southern scrap market is in an excited condition, but this time it is the reverse of that which has prevailed for the past five or six weeks. Prices are tumbling and purchasers are asking for further concessions. Quotations on every grade have dropped from $2 to $5, and changes are being made daily. Heavy melting steel has dropped from $24 to $21, and buyers will not pay the latter figure. Old steel axles are down $5, and old steel rails have gone from $30 to $27. No. 1 wrought is quoted around $30. Car wheels are offered at $26, and tramcar wheels at $24 to $25. Stove plate is off from $1.50 to $2, and shop turnings $3. There is not a large quantity of stock in hand, but much tonnage is under contracts and future prospects are exceedingly bright.

Sheet Allotment Heavier

More Tonnage is Distributed For Government Needs and Shipments to Private Buyers Are Reduced Correspondingly

Pittsburgh, July 17.—Sheet manufacturers are being called upon for additional tonnages for shipment to manufacturers working on government contracts. Orders are being distributed quietly and mill managers are saying nothing for publication about the extent or nature of this work. Approximately 10 per cent of the sheet mill capacity of the country now is being devoted to the manufacture of munitions in various forms; it is believed that fully 40 per cent of the output of sheet mills will be used directly or indirectly by the government before the end of the year. Many manufacturers have decreased appreciably shipments to companies not engaged in the manufacture of commercial or industrial necessities, and federal officials are being called upon more frequently to define both "necessities" and "luxuries." Along this line it is interesting to note that official Washington a few days ago was asked by a sheet maker to determine whether cream separaters, used on dairy farms, are regarded as a luxury or a necessity. The domestic market for sheets is almost at a complete standstill. Although a few mills have some tonnage available for delivery before autumn, not enough material is being sold in the open market to affect quotations.

Trying to Save Tonnage

Youngstown, July 17.—Officials at Washington are conserving in the use of sheets for war purposes. Substitution has been made along numerous lines. At several of the cantonments the use of corrugated roofing has been done away with and prepared roofing substituted. Considerable quantities of galvanized sheets are used in the manufacture of garbage cans, buckets, etc., and one leading producer in this district has satisfied the needs of the government in this respect. Miscellaneous inquiries continue to subside. The disposition of buyers in hesitating to place orders for the distant future is influenced by the recent government announcement against profiteering and the regulation of prices. The present market parallels that of recent weeks. The mills are able to take care of allottments in very short time. One of the larger producers has been able to turn out his contract within two days after specifications were received. The embargo placed by the government on all foreign shipments has affected conditions somewhat. A majority of the valley producers doing foreign business have in the past contracted for warehouse space at outgoing ports, and as this is paid for whether used or not, shipments are being deferred temporarily and the material for foreign contracts diverted to domestic trade. Blue annealed sheets No. 10 continue firm at 8.50c to 9c; bessemer No. 28 black at 9c to 9.50c, and galvanized sheets No. 28 at 10.75c to 11.50c. A current inquiry for a block of bessemer No. 28 galvanized was satisfied by one of the larger producers and brought 11.50c. One large bessemer maker has deferred shipments temporarily because of convertor re-lining by the mill furnishing the sheet bars. Traffic conditions in this district are little changed.

Only War Orders Accepted

Philadelphia, July 16. — Although sheets were fairly active in this district last week, the supply has been pretty well cleared up and there are no more offerings. The leading eastern maker has decided for the present not to accept any more tonnage except for government purposes. Further fair-sized government orders were placed during the week. The principal business consisted of sales of some 2000 tons of black sheets, mainly for export, at 8.75c, Pittsburgh, for No. 28, for shipment within 60 days. A fair lot of No. 10 gage black sheets was disposed of at 8.75c, Pittsburgh. A large tonnage of blue annealed sheets was sold by a western maker at 8.50c, Pittsburgh, for early shipment. Galvanized sheets in considerable quantity also were sold at 10.50c, Pittsburgh, for No. 28 gage, for early shipment.

Market Remains Quiet

Chicago, July 17.—Sales of sheets outside of government interests have become practically negligible. No price changes have been reported.

Want Tracks For Front

French Government Inquires For 30,000 to 35,000 Tons—France Places Locomotives—Cars More Active

New York, July 17.—Inquiries are pending for large quantities of portable track material for the French government. These will call for 30,000 tons of light rails and for several thousand tons of steel ties.

The most important car order placed during the week was one for 1200 gondolas, placed by the Hudson Bay Co. for shipment to the Dutch West Indies. Nothing new yet has developed with regard to other export inquiries, including one which recently was put out for an additional 10,000 cars for the Russian government. On the latter inquiry no actual negotiations yet have developed. The South Buffalo railroad has let an order to the American Car & Foundry Co. for 300 hopper cars. The Republic Iron & Steel Co. is in the market for 50 coke and 50 gondolas, the Northern Pacific for 500 sets of center sills, the Delaware & Hudson for 50 underframes and the Central Railroad of New Jersey for repair parts for a large number of cars.

The French government has placed 1600 locomotives with builders in this country.

Several lots of standard open hearth rails averaging 100 to 300 tons were sold during the week at $75 and $80, mill. Sales of small tonnages of axles for repair work have been made to eastern roads at 6c and 6.25c, Pittsburgh.

The Colorado Fuel & Iron Co. has sold several tonnages of rails to western roads at $50, mill.

Pennsy Asks For Spikes

Pittsburgh, July 17.—The Pennsylvania railroad is in the market for 12,000 kegs of standard railroad spikes for delivery the remainder of the

year. Industrial and mining interests in all sections of the country are buying material for prompt and future shipment. Standard spikes generally are being held at 5c and small spikes are quoted at as high as 7c. Light rails for industrial purposes are being purchased at as high as 80 a ton.

Ann Arbor Wants Spikes

Cleveland, July 17.—Inquiry for 1500 kegs of spikes for first half of 1918 delivery has been put out by the Ann Arbor railroad.

Buying Revives Slightly

Chicago, July 16.—Orders for cars and locomotives placed recently by the railroads seem to indicate a buying movement somewhat heavier than has existed for some time. The Union railroad has ordered 1500 seventy-ton hoppers for the H. C. Frick Coke Co., from the Ralston Steel Car Co. It is reported that the Shell Co., Los Angeles, is in the market for 50 to 100 tank cars. The Atchison, Topeka & Santa Fe railroad has ordered 30 mikado locomotives from the Baldwin Locomotive Works, for January delivery and has reserved space for 70 additional locomotives to be delivered during 1918. The Santa Fe has announced that its recent purchases of equipment have aggregated 3800 freight cars at a cost of $8,910,000 and 130 locomotives costing $6,500,000. The first delivery is to be made in August.

Warehouse Stock Low

Chicago, July 16.—Warehouses continue to receive many inquiries for iron and steel materials but have not been able to fill their depleted stocks. In spite of the big demand, dealers see no possibility of obtaining additional supplies so long as the mills are operating to capacity. The stack on No. 10 gage galvanized sheets is unusually low. These sheets are still quoted at 11c. No. 10 gage blue annealed and No. 28 gage black sheets remain firm at 9.50c. Steel bars from store are quoted at 4.50c as also are iron bars. The warehouses quote shapes at 5c and plates at 8c.

Starts Tool Plant

The A. F. Way Co., Hartford, Conn., designer and builder of tools and special and textile machinery, recently has been chartered with $50,000 capital. Suitable quarters have been obtained at 32 Union place, Hartford, Conn., and all initial requirements have been provided for. Included in the personnel of the new company are the following: John T. Way, president; William C. Loehrig, vice president, and Arthur F. Way, secretary and treasurer.

Lower Prices

Are Shown on Spot Furnace Coke and on Ferromanganese

Pittsburgh, July 18. (By wire.)—Spot Connellsville coke today was offered at $11, oven, or $6 below the price of two weeks ago.

Eighty per cent ferromanganese has been offered at $375, delivered, for prompt and $350 for first quarter of 1918. Most dealers, however, are asking $400 for prompt and $375 for the latter part of this year.

Opens New Warehouses

Three new supply warehouses have been opened by the Western Electric Co., New York, pursuant to its policy of expansion. To serve the trade in Connecticut and adjacent territory, an office has been opened at 135 Wood street, New Haven, with Tyler L. Holmes in charge. S. Greenfield, of the Philadelphia, house, is in charge of the new Baltimore branch, 425 East Oliver street, opened July 16. A warehouse and sales office has been opened at 238 West First street, Charlotte, N. C., with R. H. Bouligny in charge. New and commodious quarters have been fitted out at 84 Marion street, Seattle, a change made necessary by the growing demands of the business in the northwest. W. H. Kirk has been appointed manager of the company's Cincinnati house. He will be succeeded in the Cleveland office by W. L. Sioussat.

To Make Electric Steel

The Glover Machine Works, Atlanta, Ga., will install an electric melting and refining furnace to be furnished by the John A. Crowley Co., Detroit. The foundry building, which already has been erected, will be commanded by a 40-foot crane of 15 tons capacity.

Opens New Foundry

The Champion Foundry & Machine Co., Chicago, formerly the Champion Foundry Machinery Co., has opened a new foundry in Aurora, Ill. The new foundry is equipped with two cupolas and will have a capacity of about 25 tons daily. All equipment has been bought and it is expected that the first pouring will be made about July 20. This plant will be devoted especially to the production of machine molded castings. J. T. Magnuson is president of the company, and H. O. Magnuson is secretary-treasurer.

Ore Boats Delayed

By Lake Car Shortage—Shipments are Crippled

Cleveland, July 17.—Ore boats continued to be seriously delayed by the shortage of cars. Many vessels have been lined up at most of the unloading docks waiting turns to unload. Irregular coal shipments account partially for the scarcity of cars. The following tables show June ore shipments from upper lake ports and receipts at Lake Erie ports:

ORE SHIPMENTS

Port	Shipments June	To July 1
Escanaba	909,804	2,205,297
Marquette	527,701	625,749
Ashland	1,176,517	1,909,468
Superior	2,121,663	3,562,082
Duluth	3,363,211	5,128,894
Two Harbors	1,541,095	2,739,645
Totals	9,639,991	16,135,135
1917 increase	132,415	.....
1917 decrease	.....	3,480,432

ORE RECEIPTS

Port	Gross tons
Buffalo and Port Colborne	997,383
Erie	231,814
Conneaut	1,519,860
Ashtabula	1,489,899
Fairport	378,938
Cleveland	1,574,642
Lorain	750,003
Huron	232,379
Toledo	326,984
Detroit	75,861
	7,577,763

Charcoal Furnace Sold

The furnace of the Stephenson Charcoal Iron Co. at Wells, Mich., has been sold to the Delta Chemical Co. for a consideration of about $200,000. Officers of the Iron company have sold their stock to the Chemical company, but some of the stockholders have not done so. The Delta Chemical Co. is owned by eastern capital, and as the chemical company and the furnace are operated as dependent industries, it became advisable that both industries be brought under the same management.

Adds New Department

The American Steel Export Co., Woolworth building, New York, has added a new department for handling bolts, nuts, rivets, spikes, tie plates and other products. This has been placed in charge of J. Edmund Good of the New York office of the American Iron & Steel Mfg. Co., before this interest was taken over by the Bethlehem Steel Co.

The Feenburg Iron & Metal Co., Tulsa, Okla., has acquired a tract of three and one-half acres in that city formerly occupied by the Tulsa Glass Co., which will be converted into a modern scrap yard. The company now is in the market for shears, crane and drop.

Coke Prices Still Falling

Furnace Fuel Drops $5 Below Recent High Mark—Car Supply Full But Labor Shortage Returns

Pittsburgh, July 17.—Quotations on spot Connellsville blast furnace coke continue to decline. Heavy tonnages were sold on Saturday and Monday at $11.50, or $5 a ton under the recent top, and talk of $10 coke is heard. Spot foundry coke has declined to about $12.50 or $13, ovens. The car supply the last fortnight has been exceedingly good. Last week, it was 95 per cent, compared with 75 per cent the week before. The supply yesterday and today is estimated at 100 per cent. Unfortunately, however, cokemakers have been unable to take advantage of the better car situation, on account of the shortage of labor. Not much more than 75 per cent of the rated capacity of beehive ovens is being moved. The market for contract furnace and foundry coke is unchanged. Production of coke the week ending July 7 was 349,218 tons, a decrease of 21,950 tons, compared with the week before, according to the *Connellsville Courier*.

Prices Drop Steadily

Philadelphia, July 16.—Quotations on spot furnace coke continue to decline. Good-sized sales were made last week at $13.25, Connellsville, for spot. Considerable spot later was sold at $12.75 and today a good-sized tonnage was offered at $11.75.

Some Spot Foundry Sold

Chicago, July 17.—Scarcity of coke in this district precludes sales of much market significance. Prices on furnace grades have diminished slightly. Pick-up sales of Connellsville foundry coke have been made within the last week at from $18.15 to $18.65, Chicago.

Tenseness Has Disappeared

St. Louis, July 17.—The tenseness which has featured the coke situation for several weeks, disappeared from the market during the last days of the past week. Sharp declines in the east were reflected here in a generally easier tone, and new inquiries were smallest for any seven-day period for more than two months. Labor unrest in many directions formed another bear factor. The riots in the Missouri lead and zinc districts are the result of trouble which has been brewing for a long while, and which has cut down production, and incidentally released considerable coke engaged by the spelter interests. The demand from that source will be much smaller than heretofore, as there is little likelihood of things getting back to normal before the middle of next month. Early in the week a small tonnage was reported sold on a basis of $15, ovens, but later considerably less could have been done. Foundry coke is held firmer relatively, but all buyers are disposed to hold off for lower prices.

There has been considerably less complaint on the score of deliveries. The number of cars for moving coke has been fairly well maintained.

Getting Some Spot Fuel

Cincinnati, July 16.—Some spot furnace and foundry coke is being obtained from the Connellsville district, which is welcomed by the purchasers, even at prevailing prices. A wide range in spot quotations prevails. From $14 to $16.50 rules in the Connellsville field on foundry coke. New River foundry coke is also on the same basis. Wise County and Pocahontas prices are probably a little lower for prompt shipment. Coke for immediate delivery in the different fields, however, is too scarce to set any definite prices. Contracting is light in both furnace and foundry coke.

Increasing Southern Supply

Birmingham, Ala., July 17.—While the coke supply in Alabama is meeting all present demands, contemplation of the future shows a necessity for more production. As preparations are being made to start idle furnaces, arrangements are being perfected to rehabilitate old coke ovens and otherwise to increase output. The Birmingham Trussville Iron Co. will begin coke making in a few weeks or shortly before its furnace is started. The Sheffield Coal & Iron Co. also will operate ovens at Junifer. Coke prices in Alabama continue as high as they have been for some time. Manufacturers of coke can sell all the product they have. With the exception of a car or two, no coke is being sold in this district. The quotations range between $10 and $12.50 for foundry coke on contract, and as high as $15 on spot car lots. Furnace coke is selling at $4 to $8 on contract and at $8 to $10 on spot. The maximum prices are in rare cases.

A contract has been awarded by the Youngstown Sheet & Tube Co. to Stone & Webster for the placing of foundations for the new 34-inch plate mill. The Republic Iron & Steel Co. has awarded a contract to the Dravo Construction Co. for the foundation work in connection with its two 80-ton open hearths at Youngstown.

Wire Mills Busy

In Filling War Orders and Further Tonnage is in Sight

Pittsburgh, July 17.—The American Steel & Wire Co. is credited with having informed its jobbers that no change in prices likely will be made during the war. The leading interest will continue to furnish material at $3.20 a keg as long as middlemen are satisfied with a reasonable margin of profit, this being about 50 cents per 100 pounds. The American company has made no changes in its prices since March 5 last. Independent makers since that date have boosted quotations $16 a ton, effecting advances of $6 on May 1 and $10 on June 15. Obviously, jobbers handling stocks of independent makers are finding it difficult to compete with concerns supplied at lower prices. The government, it will be recalled, recently bought 50,000 kegs of nails at $3.20 a keg. Specifications for wire products are heavy, but no new tonnages of importance are being placed. Indications are that the government will be the most active factor in the market during the summer months.

Trade Watching Effect

Buffalo, July 17.—Considerable interest prevails as to the effect of the stand taken by the American Steel & Wire Co. on the wire nail situation. This maker is understood to have notified wholesalers of this district that they believed the correct retail price to be $3.85 base a keg, allowing $3.50 mill price, 15 cents freight, and 50 cents margin to the wholesaler. Standard railroad spikes have experienced a further advance and small orders for immediate shipment now bring 5¼c to 5½c.

Starting New Furnace

The new 550-ton blast furnace at the Hazelton group of the Republic Iron & Steel Co., Youngstown, is about to be blown in. The Atlantic stack at New Castle is being blown out for relining and repairs. Arrangements have been made by the company for the rebuilding of the Hannah furnaces, Youngstown, but the date is indefinite. The No. 1 stack of the Hazelton group also will be overhauled at a later date.

Row Holds Up Ship Plants

General Goethals' Proposal to Build Two Large Government Yards Awaits Upon Chairman Denman's Co-operation

WASHINGTON, July 17.—The proposal of Maj. Gen. George W. Goethals to build two immense government shipyards to supplement the 425 ships private plants are constructing or negotiating for, will, if executed, direct another heavy draft on the steel industry. The controversy between Gen. Goethals and Chairman Wm. Denman of the shipping board, however, seems to be far from settled and it is a question if the directors of the emergency fleet corporation will approve the general's plans entirely. The majority of the members of the shipping board are believed to favor Mr. Denman. The executive order issued last week by President Wilson, under authority of the recently enacted urgent deficiency law, specifically directs that the corporation shall have and exercise all power and authority "insofar as applicable to and in furtherance of the construction of vessels, the purchase or requisitioning of vessels in process of construction, whether on the ways or already launched or of contracts for the construction of such vessels, and the completion thereof, and all power and authority applicable to and in furtherance of the production, purchase, and requisitioning of materials for ship construction." It would seem from this order that Mr. Denman, as president of the board, and with a majority of its members concurring in his views, dominates the situation. Gen. Goethals' authority apparently is limited to recommendations. Mr. Denman is understood to have been highly displeased because General Goethals' program, outlined in a letter to the chairman of the board, was made public before the latter received the communication. Moreover, it is reported that Mr. Denman will have the support of the President. Whether this is true or not remains to be seen, but it is well known that the President has grown tired of the differences between Mr. Denman and Gen. Goethals and is prepared to throw his influence one way or the other.

Two Great Yards Planned

The urgent need for ships led General Goethals to announce that on Monday he would offer contracts for the building of the two government shipyards. Later developments caused the postponement of the placing of these contracts. It is proposed that these two yards shall have the capacity to build 400 standardized steel ships of an aggregate tonnage of 2,500,000 within the next 18 or 24 months. Estimates have been made that this would involve approximately 1,000,000 tons of structural material, of which about 600,000 would be steel plates. This would be in addition to the construction steel required for the yards themselves. There now are provided 425 ships of all kinds, besides 100 more wood ships under negotiation, so that under the entire program as executed and contemplated, 925 ships would be constructed, and the tonnage of the United States marine available for foreign trade would be increased from 2,500,000 to about 9,000,000. Of the contracts awarded or under negotiation, 448 are of wood and only 77 of steel. General Goethals says his main reliance for getting the greatest amount of the most serviceable tonnage in the shortest time will be on fabricated steel vessels of standard pattern.

Speed to be Rewarded

For the building of the two government yards General Goethals says he will offer, as compensation to the agents who undertake the work, a fee of approximately 6 per cent of the total cost of the work, with rewards for savings on cost and for speed in delivery. The contracts, the general asserts, will give the government the benefit of government-fixed commodity prices, and will provide for cessation of work at any time. Options will be given to the contractors to purchase the plants at arbitrated values on the completion of the work. The design of the ship is ready, the plans of the yards are ready, and the distribution of the work of furnishing the material and fabrication is arranged. This part of the program will take all of the $550,000,000 available, not absorbed by contracts made or making. General Goethals says the additional contracts for wood ships which he expects to place, together with the fabricated ships planned, will require more money than congress has authorized. Accordingly, an additional $500,000,000 is to be asked.

General Goethals also stated that he had definitely determined upon a policy with regard to commandeering ships. This calls for the taking over of ships, with an aggregate tonnage considerably in excess of 1,500,000, being built for private account. As fast as the berths are cleared, each yard will be devoted to the production of a single type of tonnage for which it is best suited.

More Tonnage

On Tin Plate Now is Wanted by Government for Shell Parts

Pittsburgh, July 17.—The industrial resources of the tin plate trade, which already literally have saved the day for packers of perishable food stuffs, are being called upon by the government on a much broader scale than previously. Huge quantities of tin plate are entering the manufacture of containers for shell parts and the like. This industry has been systemized so successfully that demands of the nation and domestic consumers are being met without a hitch of any kind. So far as the domestic situation is concerned, the market is a closed book.

Tonnage Shrinks

On Steel Corporation Books as Shipments Exceed New Orders

New York, July 10. — The United States Steel Corp. during June again shipped more finished steel than it booked during the month, with the result that its order book showed a further appreciable shrinkage. The unfilled orders on its books June 30 totaled 11,383,287 tons. This is a decrease of 503,304 tons from May 31, or more than 4 per cent.

Electrochemical Society to Discuss War

The tentative program of the thirty-second general meeting of the American Electrochemical society, to be held at Pittsburgh Oct. 3 to 6, has been announced. The principal feature of the meeting will be a series of papers and discussions on electrochemical war supplies and the part the electrochemical industry will play in the present struggle. Regular meetings will be held Thursday and Friday mornings, Oct. 3 and 4, when a symposium on electrochemical war supplies will be given. The afternoons and Saturday morning will be devoted to excursions to industrial plants.

Blooming Mill Started

The new electrically operated No. 5 blooming mill of the National Tube Co., Lorain, O., which has been under construction for the past few months, has been put on regular production. The new mill was given a trial "turnover" about two weeks ago.

Plate Plant on Pacific Coast is Planned

William H. Crocker and Col. D. C. Jackling, together with associated western capitalists are said to have plans under consideration for the manufacture of steel plates on the Pacific coast to be used by the government in its shipbuilding program. Several hundred acres of tidewater land in south San Francisco, as well as considerable land at the south end of Lake Washington near Seattle have been optioned, according to reports. The Western Pipe & Steel Co., San Francisco, the recent purchaser of the Shaw-Batcher factory in South San Francisco, it is said, is one of the principals of the deal.

Buys Original Site

The Vernon Machine Co., 54 Hermon street, Worcester, Mass., maker of engine lathes and machinist, has purchased the property it occupies. Sentimental reasons, as well as an investment, entered into the sale, as the old building is the place where the foundation of the Reed-Prentice Co. business was laid many years ago. Vernon F. Prentice, president of the Vernon Machine Co., and his brother, Albert F. Prentice, with Frederick E. Reed, started their careers in a little machine shop on this site.

Will Start Mill

As soon as needed repairs can be made, the old plant of the Sheffield Rolling Mill Co., Sheffield, Ala., will resume work after having been idle for several years. J. A. Armistead of Birmingham, Ala., has leased the plant for a year with an option for a longer period. Ample financial backing has been secured.

Will Build Cranes

The Chesapeake Iron Works, Baltimore, has taken up the manufacture of electric traveling cranes. It is specializing in the production of overhead cranes of the three-motor direct-current type from 5 to 30 tons capacity, and of 5-motor double trolley units up to 60 tons capacity. The company's previous line of production was exclusively of fabricated steel for bridges and buildings.

Mining Companies Merged

Organized as a holding company with $15,000,000 authorized common stock and $3,000,000 preferred, the Breitung Co., New York, has taken over the Mary Charlotte Mining Co., the Breitung Hematite Mining Co., the Juliet Iron Co., the Lucky Star Mining Co., the Washington Iron Co., the Clifford Extension Iron Co., the Hopkins Mining Co. and the Breitung Iron Co., owner of the Loon Lake Mining Co.

The Bloomfield Foundry Co., Bloomfield, N. J., maker of brass, aluminum and nickel castings, has completed a foundry addition, 65 x 125 feet.

The Lebanon Chain Works, Lebanon, Pa., has received an order from the government for a large tonnage of 2¼-inch chain for installation aboard various types of vessels.

The William Tod Co., Youngstown, has disposed of part of its shell-making equipment and officials of the company say that it is not likely that it will make any more ammunition.

The machine shop and foundry of the Thomas Carlin's Sons, Pittsburgh, were sold at public auction, July 9, to the Modern Machinery Exchange and the Manhattan Machinery Exchange, both of New York, for $120,100.

The American Steel & Wire Co. is negotiating for a long lease of about 40 acres of land on both sides of Mill brook, Worcester, Mass., where a dam will be built to create a reserve water supply for its north works.

Drilling now is in progress by the Eastern Steel Co., Pottsville, Pa., at the Rittenhouse Gap iron ore mine. Several holes ranging in depths from 50 to 1000 feet have been drilled into a heavy bed of ore.

Wheelock, Lovejoy & Co., of Cambridge, Mass., and New York City, have opened a warehouse and office at 1800 Columbus road, Cleveland, O., where they will carry a complete stock of their special machinery steel.

The Youngstown City Forge Co., Youngstown, O., recently organized by Peter Llewellyn and associates, is equipping a plant for the manufacture of heavy forgings. Contracts have been placed for virtually all the equipment.

The Bolles Iron Works, Detroit, is completing a new factory and will soon be able to fabricate 30,000 tons of steel yearly. The facilities of the company have been offered to the government in its ship building campaign.

The Non-Ferrous Metals

Copper **Lead** **Spelter** **Tin**

New York, July 17.—An even more unsettled condition has prevailed in the metal markets during the past week as a result of the President's suggestion on Thursday of a government-controlled price, for both the government and public consumer alike. Virtually all metals with the possible exception of tin, an imported article, have been depressed. As it is regarded that the price which possibly may be established will be considerably under the level now prevailing on most commodities, consumers are continuing their hand-to-mouth policy of buying with even more exactitude, although no continued certainty of it exists. In the copper market, which probably would be the most seriously affected under the proposed ruling, trading has been at a standstill with prices tending downward. Another factor for weakness in this market have been the advices from Washington stating that Secretary Daniels would not pay for the recent government order of 60,000,000 pounds at the rate of 25 cents, as was first proposed, but would pay at present 18.75 cents' or 75 per cent of the original quotation, and leave the balance to be adjusted by the federal trade commission. Today's quotations on electrolytic copper are as follow: Spot, 29.75c to 30.25c, cash, New York; July, 29.25c to 29.75c; August and September, 28.50c to 28.75c, and fourth quarter, 27.25c to 27.75c. Lake copper for prompt shipment is quoted 29.50c to 30c, cash, New York, while casting copper is holding around 28.75c to 29.25c, cash.

The spelter market has remained stagnant. Prime western for prompt and July delivery may be quoted 8.37½c to 8.62½c, St. Louis; August, 8.62½c; and September, 8.62½c to 8.75c. Brass special for prompt delivery is holding at 9.25c to 9.37½c, St. Louis.

Prices on the outside lead market have slumped off steadily. Several of the larger producers are holding firm, but second hands have made numerous concessions. The outside market today is quoting prompt and July shipments at 10.37½c to 10.50c, St. Louis, and August shipments at 10.12½c to 10.25c. The American Smelting & Refining Co. continues to quote 11c, New York.

The steadiness of tin has been one of the features of the past week. Demand has been dull, Straits tin has been holding firm at around 62c to 63c, New York. No announcement has been made as yet by the tin committee. The present quotation on spot Straits tin is nominally 62c, New York.

The aluminum market has been exceedingly quiet. Outside prices follow: No. 1 virgin, 55c to 57c; No. 1 remelted, 53c to 55c; and No. 12 remelted, 40c to 42c, all for prompt shipment.

Antimony has continued its decline of the past several weeks, spot material now holding around 15.25c to 15.75c, duty paid, New York. Trading has been very quiet.

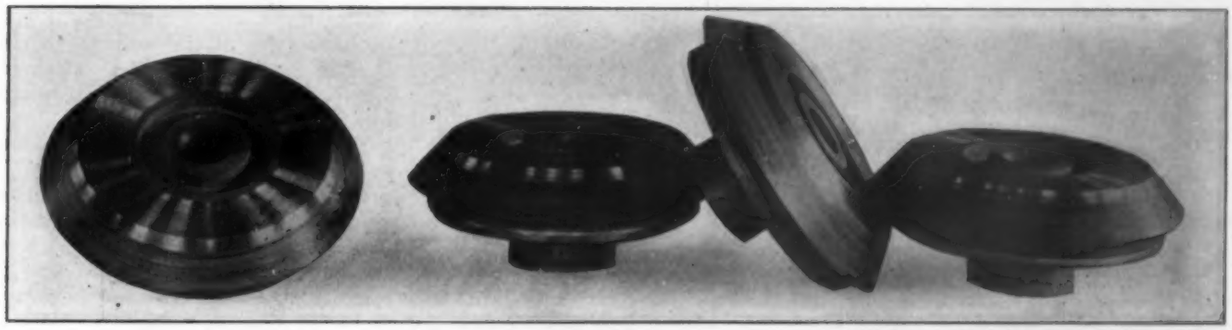

Fig. 1—Group of Finish Turned Rawhide Bevel Blanks with Brass Front Flanges and Cast Iron Back Plates and Centers to be Used for Right-Angle Drives—Note the Knife-Like Edges of the Blanks.

Making Rawhide Gears and Pinions

How an Eastern Manufacturer Cures the Hides, Cuts Them Into Discs, Forms the Blanks, and Cuts the Teeth—Machinery Operations Similar to Those on Metal Gears

ALTHOUGH for a long period of time American manufacturers have been devoting their attention to the problem of improving the conditions surrounding workmen in industry, it is only within the past few years that they have begun to appreciate the detrimental effects of noise and vibration. Competent authorities state that noise and vibration are responsible for a large per cent of the avoidable accidents which occur in all branches of industry. Noise often makes it impossible to give orders, and it is claimed that vibration eventually shatters the nervous system and creates an unnatural strain which weakens a workman's faculty for avoiding danger.

With these facts in mind, and realizing that excessive vibration destroys the sturdy mechanisms of machines as well as delicate nervous systems of the individual, the New Process Gear Corp., Syracuse, N. Y., has developed a type of driving gear which is designed to eliminate noise.

The plant in which these gears are made occupies only a part of one of the several buildings owned by the New Process Gear Corp. Three floors, 70 x 120 feet, are devoted to the manufacture of rawhide gears. The first floor is occupied by heavy tools including gear hobbers and large-size drills; the second floor is given over to smaller machines, including lathes, hide-cutting devices and punch presses, and on the third floor is equipment for preparing the hides. The curing room is on the third floor, and it is here that the gear blanks after being cut and glued go through the seasoning process.

The first step in the manufacture of hide gears consists of curing the green hides. Selected hides are shipped in carload lots from western packing houses to the company's plant, where they are put through a secret process of curing which eliminates all waste matter and leaves the animal fiber tough and dense. The cured material is very hard but not brittle and will stand a heavy pressure. The hides, each of which is approximately 6 x 8 feet and weighs from 22 to 26 pounds, are then taken to the machine shops where they are cut to size. The machine which is used to cut the hide for large gear blanks is shown in Fig. 2. This tool is essentially a drill press,

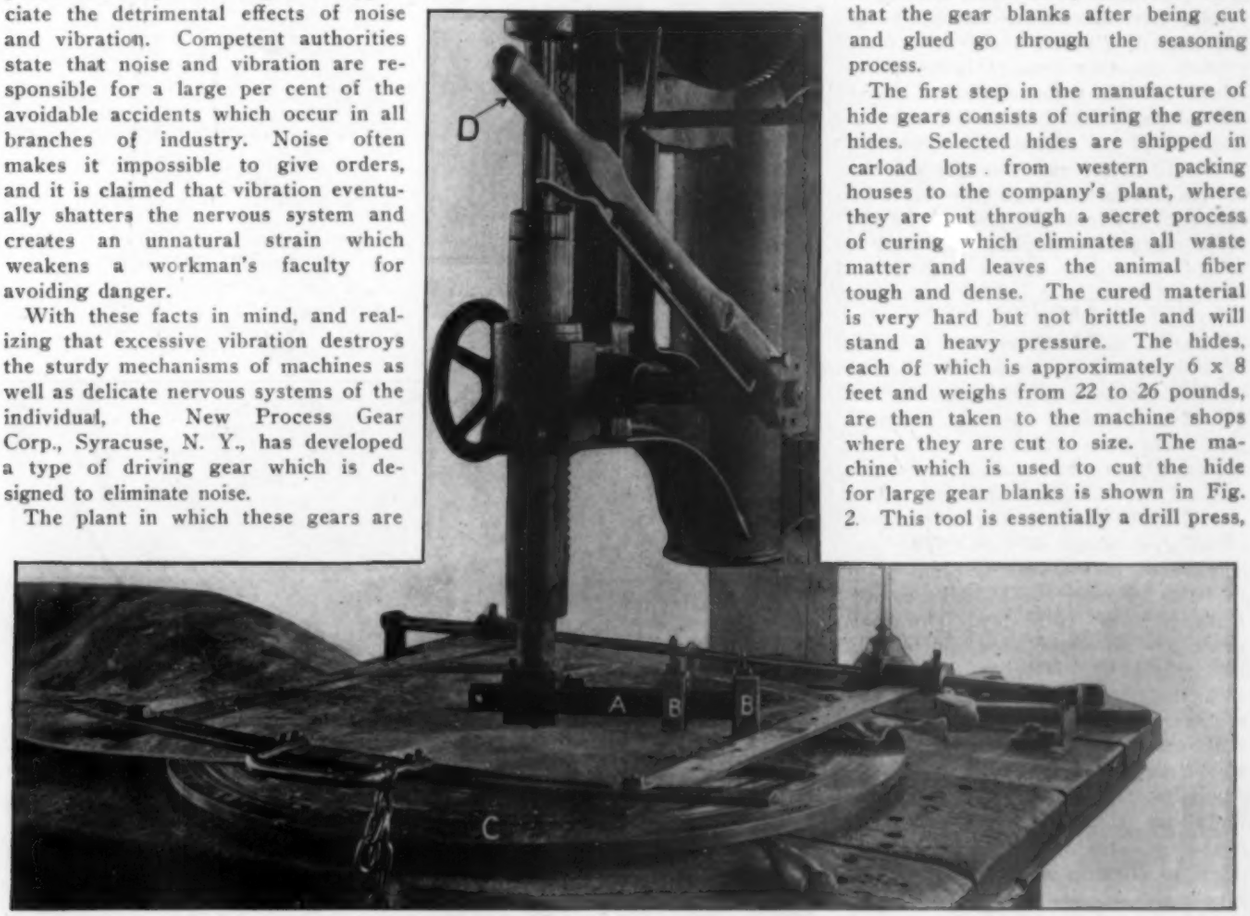

FIG. 2—CONVERTED DRILL PRESS USED TO CUT HIDES USED IN LARGE GEARS. STEEL FRAME TO WHICH THE CHAIN IS ATTACHED HOLDS THE HIDE DURING CUTTING

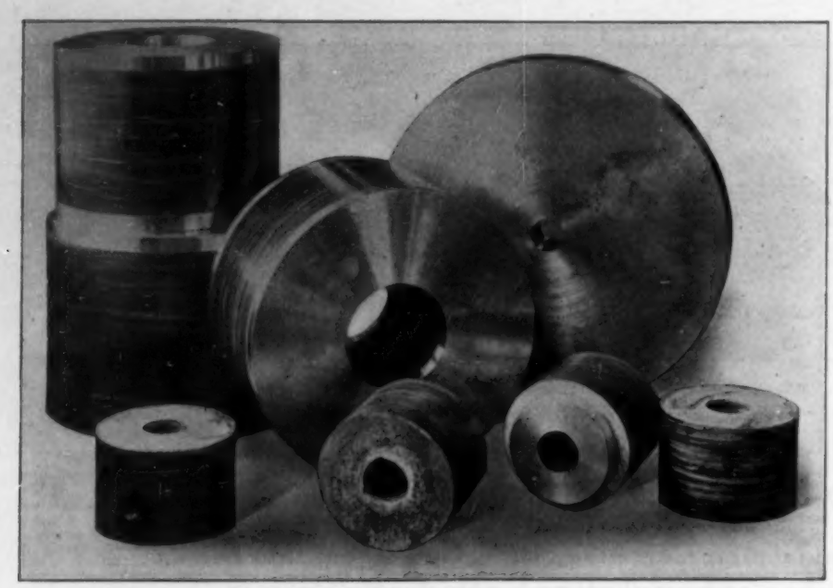

FIG. 3—GROUP OF FINISH-TURNED BLANKS WITH PLAIN, BRASS AND STEEL-FLANGED SIDES READY TO BE CUT ON GEAR CUTTER

as may be seen from the illustration. The arm A is bolted to the spindle of the drill and this arm is equipped with two cutters, B,B. The hide is placed on the brass plate, C, and the steel frame, to which the chain is attached, is laid down over the hide, holding it firmly. The cutters are then placed at any desired distance from the center of rotation, this distance being determined by the required outside diameter of the gear to be made, and the diameter of the center hole. The drill is started in the usual manner and the cutters forced through the hide by means of the lever, D, precisely in the same manner as a piece of metal is drilled.

How Discs are Held Together

After a sufficient number of discs have been cut to make the desired thickness of the gear face, they are dipped in a vat of specially prepared glue. The discs which are to be used in large gears are assembled in individual steel frames and put under a hydraulic press having a pressure capacity of about 40 tons. The machine used in the New Process plant for this purpose was built by R. Dudgeon, New York City. The small gears are not assembled individually but are made up into bars from 12 to 18 inches long, placed in the press and cemented under 40 tons pressure. In both cases the blanks are placed in steel frames equipped with adjustable staybolts, and every few days these bolts are tightened. The blank is kept compressed for several days, and often as long as a week, giving the glue plenty of time to dry and insure the blank against subsequent warping. In Fig. 8, A shows the discs assembled in the steel frame after having been subjected to hydraulic pressure and

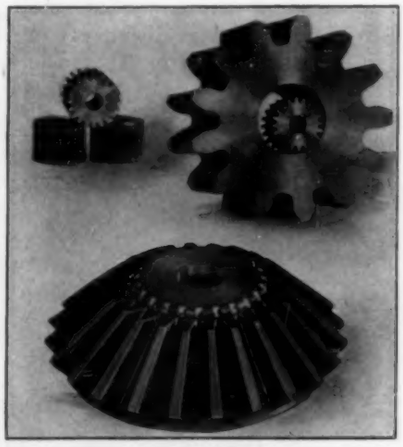

FIG. 4—FINISHED SPUR AND BEVEL GEARS WITH BRASS AND STEEL FLANGES

ready for seasoning which takes from one to three weeks, depending largely upon the size of the gear to be cut. B, Fig. 8, shows the blank after removing from the frame prior to rough turning on the lathes.

The blank is said to be as unyielding as a metal casting and is handled in precisely the same way in the machine shop. The outer diameter is turned in a lathe to within 1/16 to ⅛ inch of the finished diameter. In the case of small gears, the entire roll is turned at the first cut to within these dimensions and the piece is later sawed into lengths corresponding in thickness to the desired widths of the gear faces. Flanges and metallic centers, if used at all, are applied and the gear drilled for rivets, tap or screw bolts which are put through the rawhide to insure permanency of bond between the layers. Except in largest size gears where bolts and nuts are sometimes used as binders, the metal plates are countersunk, the rivets flattened down and the plates machine-finished on both sides of the gear. If no plates are used the rawhide is countersunk for the rivets.

All Leather Scraps are Utilized

After taking as many discs of large size as possible from the hide, the remaining perforated sheet is turned over to punch-press operators who cut out as many small-diameter blanks as possible. The hide is practically all used, though some waste is unavoidable. The scraps from the punch presses and the chips from the lathes and gear hobbers is disposed of to paper mills, and it is stated that the material is used to make a heavy wrapping paper. The punch presses which are used to cut the blanks for small gears are the product of the Stiles & Fladd Press Co., Watertown,

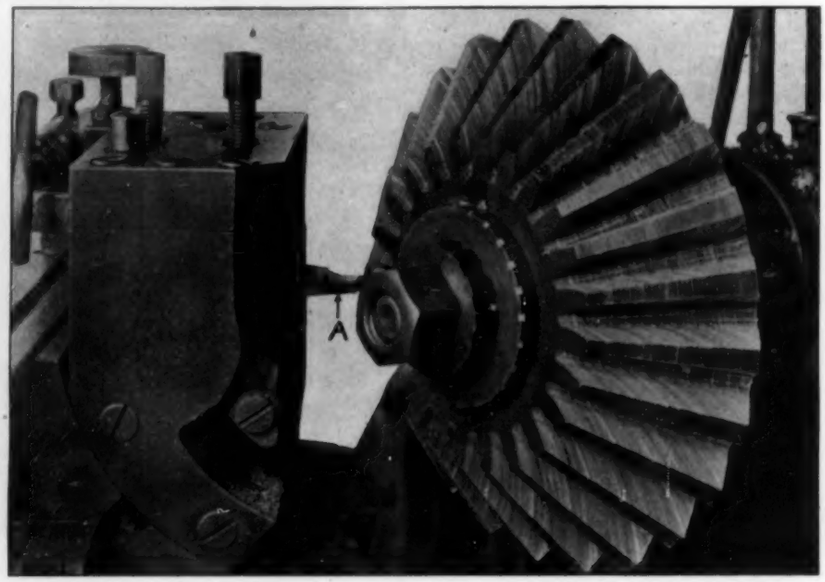

FIG. 5—RAWHIDE BEVEL GEAR AFTER THE FINISHING CUT ON A GEAR PLANER

N. Y., the Advance Machine Works, New York, and the E. W. Bliss Co., Brooklyn, N. Y.

After rough turning the blanks to approximate size they are taken to the finishing lathes. The work is done on 14 engine lathes built by the Reed-Prentice Co., Worcester, Mass. The blanks are brought to within 0.001-inch of size. Fig. 1 shows several bevel gear blanks, brought to size on the lathe, face-plate machined and ready to be set up on the gear cutters. Fig. 3 shows several sizes of blanks, metal-faced and plain, finish-turned to size, ready to be cut into spur gears on the gear cutters.

Tools Used in Setting Up

After finishing, the blanks are ready to be set up in the gear cutters. The equipment for this work consists of six bevel gear planers made by the Gleason Works, Rochester, one spur gear cutter built by Gould & Eberhardt, Newark, N. J., five spur gear cutters made by Brown & Sharpe Mfg. Co., Providence, R. I. Fig. 5 shows a large bevel rawhide gear set up in one of the gear planers. Fig. 7 shows a 30-tooth 2-pitch 6-inch face rawhide gear with steel flanges and a cast iron center in a spur gear cutter. The finishing cut had just been completed with an involute cutter when the photograph was made. Fig. 4 shows finished spur and bevel gears, brass-flanged and steel-plated. Fig. 6 illustrates a spur-gear with brass flanges on a 36-inch cutter using an involute cutter. After the gears are finished on the cutter or planers they are shellaced and paraffined before shipping.

In addition to the machine tools mentioned in this article, the following equipment is in use in the rawhide department of the New Process Gear Corp.: One multiple-spindle drill built by the Baush Machine Tool Co., Springfield, Mass; one radial drill, made by the Cincinnati Bickford Tool Co., Cincinnati; one single-spindle drill built by the Sipp Machine Co., Paterson, N. J.; four high-speed multiple spindle drills, and one press made by the E. W. Bliss Co., Brooklyn, N. Y., used for riveting steel plates on the rawhide gear blanks. The power equipment consists of a 40-horsepower alternating current motor with starting compensator for motor control, made by the General Electric Co., Schenectady, N. Y. This type of installation is standard throughout the New Process plant. Chain block and tackle installed on a monorail system serve the planers where heavy rawhide gears are to be lifted. A magnetic separator is used to separate iron and brass particles from rawhide chips.

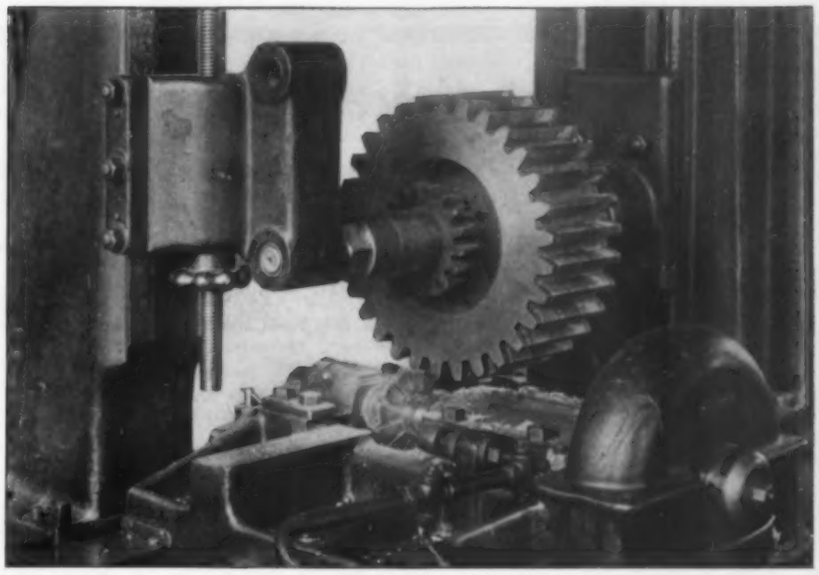

FIG. 7—RAWHIDE SPUR GEAR WITH STEEL FLANGES AND CAST IRON CENTER ON GEAR CUTTER

FIG. 8—*A*—HOW BLANK IS COMPRESSED AFTER BEING GLUED AND PRESSED —*B*, BLANK READY FOR ROUGHING CUT

FIG. 6—SPUR GEAR WITH BRASS FLANGES BEING CUT ON A 36-INCH GEAR CUTTER

An illustration of the new Union Arcade building, Pittsburgh, in colors has been published by the National Tube Co., Pittsburgh. One side of the folder on which the picture is printed is devoted to brief mention of the purpose of the new office building and information regarding the use of pipe in large buildings. It is stated that the pipe in the Union Arcade building was manufactured by the National Tube Co.

A list of the firms, corporations and individuals engaged in the production of iron and steel in the United States, Canade and Mexico has been published by R. L. Polk & Co., Detroit. It names the various plants and gives a brief description of the equipment together with a list of officers of corporations. A list of manufacturers, classified according to products is also given.

By-Product Coke Ovens and Capacities Built and Building in United States

Independent Companies

Company	Location	Number ovens	Type	Annual coal consuming capacity	Annual coke producing capacity
Algoma Steel Co.	Sault Ste. Marie, Ont.	110	Koppers	610,000	410,000
Allegheny By-Product Coke Co.	Glassport, Pa.	120	Otto	260,000	180,000
Brier Hill Steel Co.	Youngstown, O.	84	Koppers	520,000	330,000
By-Products Coke Corp.	Chicago	280	Solvay	1,300,000	860,000
Cambria Steel Co.	Johnstown, Pa.	462	Various	1,530,000	1,150,000
Camden Coke Co.	Camden, N. J.	150	Otto	360,000	235,000
Central Indiana Gas Co.	Muncie, Ind.	22	Klonne	40,000	25,000
Central Iron & Coal Co.	Holt, Ala.	60	Semet-Solvay	290,000	220,000
Chattanooga Gas & Coal Products Co.	Chattanooga, Tenn.	12	Roberts	74,000	48,000
Citizens Gas Co.	Indianapolis	141	Otto-Solvay	650,000	430,000
Cleveland Furnace Co.	Cleveland	100	Solvay	450,000	300,000
Coal Products Co.	Joliet, Ill.	53	Koppers and Willputte.	340,000	210,000
Colorado Fuel & Iron Co.	Pueblo, Col.	120	Koppers	720,000	475,000
Dover By-Product Co.	Canal Dover, O.	24	Roberts	120,000	72,000
Empire Coal & Coke Co.	Geneva, N. Y.	46	Solvay	146,000	95,000
Gulf States Steel Co.	Alabama City, Ala.	37	Koppers	230,000	161,000
Hamilton Otto Coke Co.	Hamilton, O.	100	Otto	240,000	150,000
Indiana Coke & Gas Co.	Terre Haute, Ind.	30	Gas Mach.	150,000	93,000
Inland Steel Co.	Indiana Harbor, Ind.	130	Koppers	890,000	610,000
Kentucky Solvay Co.	Ashland, Ky.	108	Solvay	800,000	544,000
La Belle Iron Works.	Follansbee, W. Va.	94	Koppers	580,000	390,000
Lackawanna Iron & Steel Co.	Lebanon, Pa.	228	Otto	500,000	340,000
Lackawanna Steel Co.	Buffalo	469	Otto and Rothberg	1,350,000	900,000
Laclede Gas Light Co.	St. Louis	56	Koppers	320,000	220,000
Lehigh Coke Co.	South Bethlehem, Pa.	424	Koppers	2,400,000	1,800,000
Maryland Steel Co.	Sparrows Point, Md.	360	Koppers	2,200,000	1,500,000
Michigan Alkali Co.	Wyandotte, Mich.	54	Otto	195,000	120,000
Milwaukee Coke & Gas Co.	Milwaukee	160	Solvay	732,000	490,000
Minnesota By-Product Coke Co.	St. Paul	65	Koppers	380,000	253,000
New England Gas & Coke Co.	Everett, Mass.	400	Otto	650,000	400,000
North Shore Gas Co.	Waukegan, Ill.	13	Solvay	55,000	35,000
Northwestern Iron Co.	Mayville, Wis.	72	Otto	330,000	220,000
Pennsylvania Steel Co.	Lebanon, Pa.	90	Solvay	387,000	260,000
Pennsylvania Steel Co.	Steelton, Pa.	180	Solvay and Koppers.	891,000	600,000
Philadelphia S. G. & E. Co.	Chester, Pa.	40	Solvay	140,000	84,000
Portsmouth Solvay Co.	Portsmouth, O.	60	Solvay	384,000	261,000
Republic Iron & Steel Co.	Youngstown, O.	143	Koppers	1,020,000	680,000
River Furnace Co.	Cleveland	204	Koppers	1,300,000	860,000
Seaboard B. P. Co.	Jersey City, N. J.	110	Koppers	680,000	470,000
Semet-Solvay Co.	Dunbar, Pa.	110	Solvay	248,000	165,000
Solvay Process Co.	Syracuse, N. Y.	40	Solvay	65,000	42,000
Solvay Process Co.	Delray, Mich.	175	Solvay	1,020,000	690,000
Toledo Furnace Co.	Toledo, O.	94	Koppers	560,000	360,000
United Furnace Co.	Canton, O.	47	Koppers	280,000	180,000
Wickwire Steel Co.	Buffalo	60	Solvay	386,000	258,000
Woodward Iron Co.	Woodward, Ala.	230	Koppers and Willputte.	1,350,000	940,000
Youngstown Sheet & Tube Co.	Youngstown, O.	204	Koppers	1,300,000	860,000
Zenith Furnace Company.	Duluth	80	Otto	200,000	130,000
Total		6451		29,623,000	20,106,000

United States Steel Corporation

American Steel & Wire Co.	Cleveland	180	Koppers	1,150,000	790,000
Carnegie Steel Co.	Sharon, Pa.	212	Otto	830,000	540,000
Carnegie Steel Co.	Clairton, Pa.	640	Koppers	3,960,000	2,600,000
Illinois Steel Co.	Joliet, Ill.	280	Koppers	1,500,000	1,100,000
Indiana Steel Co.	Gary, Ind.	560	Koppers	3,600,000	2,700,000
Minnesota Steel Co.	Duluth	90	Koppers	600,000	400,000
National Tube Co.	Lorain, O.	208	Koppers	1,320,000	880,000
National Tube Co.	Benwood, W. Va.	120	Solvay	270,000	180,000
Tennessee Coal Iron & Railway Co.	Fairfield, Ala.	280	Koppers	1,650,000	1,140,000
Tennessee Coal Iron & Railway Co.	Ensley, Ala.	240	Semet-Solvay	500,000	350,000
Total		2810		15,380,000	10,680,000

Summary

Grand total	9261	45,003,000	30,786,000
Total United States Steel Corp.	2810	15,380,000	10,680,000
Total independent companies	6451	29,623,000	20,106,000

Trend of the By-Product Market

An Account of How Certain Chemicals Derived from Coal Tar Have Gained Prominence Since the Outbreak of the War— The Trend of Production and Prices

CERTAIN few chemicals which are derived from coal tar and which are used in the manufacture of explosives and dyes have attained considerable prominence in the industrial world since the outbreak of the European war. This is due chiefly to the great demand for these materials and to the phenomenal prices now obtaining. Among the by-product chemicals, benzol, toluol, phenol and naphthalin have, perhaps received the most careful attention, due, doubtless to their extreme importance to the industries. It will be of interest therefore to make a brief analysis of the conditions which influence these four commodities.

In reviewing the various factors which shape the by-product market, it is almost an impossibility to obtain figures on production and demand that are wholly accurate. Such figures and data that may be collected may at the best be but approximate. but they indicate the general state of the market and are sufficiently accurate for this purpose.

War Causes Increase in Production

Prior to the war the quantity of benzol produced in this country was sufficient for domestic consumption, the yearly production at this time being 3,000,000 gallons. This condition was similarly true of toluol and other by-products. The amount of toluol produced yearly before the war was 750,000 gallons. Approximately 3,000,000 pounds of refined naphthalin and some 120,000 pounds of natural phenol were being produced yearly at this time. Synthetic phenol was not produced commercially until this period.

With the beginning and for the duration of the war the demand for these materials has exceeded by far the amounts needed by industries in times of peace. It is indeed interesting to note, that, after 32 months of hostilities, the output of these distillates in some cases is more than 10 times the production attained in 1913. Including synthetic phenol, the production of this material is now multiplied 20 fold.

The fall of 1914 first saw new producers of these materials coming into the field and from that time on productions have been steadily increasing until now, early in 1917, all indications would seem to show that we need not expect any marked production increases in any of these products with the possible exception of naphthalin. A 40 per cent increase over the 1916 figures for naphthalin is expected during 1917. Basing figures upon the present rates of production, the average yearly quantities that are now being manufactured are as follows: Benzol, 30,000,000 gallons; toluol, 6,000,000 to 8,000,000 gallons; naphthalin, 25,000,000 pounds; phenol, 25,000,000 to 30,000,000 pounds. About 5 per cent of this total phenol is obtained from the natural source, the remainder being synthetically prepared. The installation of by-product recovery coke ovens at most of the steel plants in this country has been the principal factor in accomplishing this great increase in the production of these products.

Immediately before the war started the prices quoted on benzol, toluol, naphthalin and phenol were as follows: Benzol, 30 to 35 cents per gallon; toluol, 35 to 40 cents per gallon; naphthalin, 2¼ to 2½ cents per pound; phenol, 7 to 9 cents per pound.

In the fall of 1914, the tremendous demand for coal tar distillates began to reflect its influence on prices. Pure benzol was needed for synthetic phenol and for domestic aniline; phenol, synthetic and natural, were required for picric acid; trinitrotoluol and the toluidines called for all the available pure toluol; and naphthalin was wanted for itself as well as for sulphonated and nitrated products. Hence the prices began to rise. Benzol reached the 80 cent mark; toluol went as high as $4.50 per gallon; naphthalin climbed to 12 cents per pound and phenol called for $1.50 per pound.

By the end of 1915 the new by-product recovery plants of the steel companies begun putting benzol, toluol, etc., upon the market; new synthetic phenol plants were making deliveries and once again the law of supply and demand started to operate, but this time in the reverse direction. During the earlier part of 1916 prices fell somewhat, benzol going to 55 cents, toluol to $3.50, phenol to about $1; naphthalin, however, still held firm at 12 cents.

These new productions were quickly taken up, especially the benzol and toluol, and the middle of the year found these prices prevailing: Benzol was 70 cents per gallon; toluol, $4.50; phenol had fallen off slightly to about 80 cents, naphthalin was bringing from 10 to 12 cents.

Increased Production Reduces Prices

The production during 1916 continued to grow larger and hence the market values again declined slightly. We now find prices about as follows, these representing the 1917 contract figures: Benzol, 55 to 60 cents per gallon; toluol, $1.50 to $1.75 per gallon; naphthalin, 7 to 9 cents per pound; phenol, 50 to 55 cents per pound. That the present prices will remain firm until the end of the war is fairly certain since no great increases in outputs are anticipated. Just what readjustments will come after peace has been declared is a matter not easily prophesied. It is also interesting to note that there are now appearing on the American market coal-tar derivatives that heretofore were only obtainable some few thousand miles to the east.

This article was prepared by the Barrett Co. and was published recently in *The Drug and Chemical Markets.*

Exhibit Every Step in Export Transaction

The export department of the National Association of Manufacturers had a unique exhibit at the First Annual Industrial Exposition and Export conference held at Springfield, Mass., recently. The association displayed the different successive steps in a typical export transaction showing letters and pictures describing each set. The transaction illustrated is a common one, shipment to South America with payment by 90-day sight draft documents against acceptance. The various steps shown were as follows: Inquiry for quotations; reply of manufacturer; credit report—the alert export manager always applies for a credit report on receipt of the original inquiry from abroad, thus enabling him to have credit information available on or before receipt of order; order received by seller; reference inquiry; acknowledgment of order; shipment as made;

shipping permit obtained from steamship company; shipper makes export declaration; ocean bill of lading; certificate of origin; marine and war risk insurance; commercial invoice; draft advice of shipment; collection memorandum—sent by seller to customer; notice of receipt of item for collection acknowledged by bank; notice of acceptance of draft by bank; notice of payment of draft by bank.

To Combat U-Boats

Charles H. Manley, consulting engineer of the Curtiss Aeroplane & Motors Corporation, Buffalo, N. Y., recently addressed the Engineering Society of Buffalo on the use of aeroplanes for destroying submarines. He outlined the recent improvement in aeroplane design and stated that in the immediate future there will be very important developments in flying boats. According to Mr. Manley, the most effective foe of the submarine will be a type of flying boat large enough to carry a gun of sufficient caliber to sink a submarine when its periscope is exposed. Such a flying boat might also be readily equipped with torpedoes, and tubes for launching them so that it could fight the submarine with its weapons or could be used against commerce raiders. According to Mr. Manley, the nearest approach to this new type of flying machine is the Curtiss flying boat now being tested by the United States navy in Florida. This machine has an upper wing spread of over 90 feet and is driven by two 200-horsepower motors and has a boat 46 feet long, weighing, with fuel and pilot, more than 5,500 pounds.

Do Grinding Wheels Grind?

BY HOWARD W. DUNBAR

THIS question has been a much debated one from the early use of the grinding wheel up to the present time as to just what occurs when the grinding wheel comes in contact with a piece of steel, cast iron or other hard material, and it probably will be surprising as well as interesting to know that the opinions of almost every one on this subject are correct to a greater or lesser degree.

In the early use of the grinding wheel and grinding machine the operation was nothing more than a polishing one, in which the material removed from the work was worn away by abrasion, friction, polishing, or whatever you may desire to call it. This fact was due to various reasons. Principally however, was the fact that the grinding machine was light, inexpensive and did not provide the proper support for the grinding wheel; and, too, the wheel in itself had not been developed to the high degree of refinement now found in a grinding wheel.

Even today, with good, heavy grinding machines, incorrect wheels, speed of work revolution or speed of wheel are used, which produce just as indifferent results as were always evident by the older methods. However, the reason for these indifferent results today cannot be charged to the grinding machine or grinding wheel, but rather to a lack of knowledge on the part of those responsible for such work for not selecting proper wheels or proper speeds to produce the best results.

Because of these facts, when some people say that grinding is nothing more than the rubbing away of material by abrasion they are correct; when others say that it is a polishing operation they are correct; and when still others say that it is a grinding operation which does not actually remove slivers of metal they are correct. By the ideal conditions, with the right wheel, right work speed, right type of machine, right kind of an operator, the grinding wheel actually cuts the metal and produces chips which resemble in shape and form chips produced by a lathe tool, only they are very much smaller and there are a great many more of them. These are the conditions which the grinding machine engineer always thinks of when speaking of the grinding operation. The object which should be constantly before every grinding operator is to make his wheel act in such a manner as to produce these little chips, because under these conditions the most metal is being removed, the greatest amount of work is being produced, and the machine and wheel are being used at their highest possible efficiency.

PHOTOMICROGRAPH OF CHIPS FROM A GRINDING WHEEL

In the illustration accompanying this article is reproduced a photomicrograph of chips removed by a grinding wheel operated under the proper conditions.

It is possible with most wheels of average grain and grade to so regulate the work speed, wheel speeds and conditions of grinding as to make the wheel actually produce these little chips. The skill of the operator and his knowledge of the art of grinding play an important part in the amount of work produced and the results accomplished. Today with a wheel 2 inches wide of the grain size commonly used, there are approximately 1,171,000 little cutting particles coming in contact with the work every minute the wheel is revolved at the recommended speeds, and accordingly there is an equal number of little steel chips removed from the work in the same time. If this width of wheel is increased, more and more particles are caused to do their share of the work, and more and more chips will be produced when the wheel is used under correct conditions. It is for this reason alone that the wide wheel is employed in the cylindrical work.

From *Grits and Grinds*, February, 1917. The author, Howard W. Dunbar, is with the Norton Grinding Co., Worcester, Mass.

Conserving Car Space

How car space is wasted by the practice of shipping commodities in single trade units is shown in a bulletin recently issued by the transportation department of the Pennsylvania railroad. The bulletin contains a series of seven diagrams showing the customary way in which various commodities such as cotton, sugar, salt, etc., are shipped. In each case the commercial unit in which shipments are ordinarily made fill half, or less than half, of the carrying capacity of the car. The diagrams show how practically the entire capacity of the car can be utilized. It is stated that if the wasted space in the freight cars on the Pennsylvania railroad system were utilized the result would be equivalent to placing more than 120,000 additional cars at the service of the country.

Announces Engineers' Convention

The eleventh annual convention of the Association of Iron and Steel Electrical Engineers will be held at the Bellevue-Stratford hotel, Philadelphia, Sept. 10 to 14, inclusive. The third day of the convention will be devoted to a patriotic program, in which engineers identified

with the army and navy will participate. A. H. Swartz, the Westinghouse Electric & Mfg. Co., with headquarters at Cleveland, is chairman of the entertainment and convention committtee.

At a recent meeting of the society held at Pittsburgh, F. D. Egan, president, and J. F. Kelly, secretary, recommended the adoption of a tentative program outlined by Mr. Swartz. Mr. Swartz said that the advisability of holding a convention this year, on account of the war, had been questioned by a few of the members. Upon conferring with Newton D. Baker, secretary of war, and other federal officials, directors of the society voted to carry out plans for the convention and recommended the adoption of a program, through which engineers identified with the iron trade may co-operate with the government during the period of the war.

Analyses of Coal

A 92-page booklet has been published by the United States Steel Corp., in which are described methods for the commercial sampling and analysis of coal, coke and by-products, as practiced at the different plants of the Corporation. The process begins at the mines, the booklet describing the manner in which samples are taken, mixed and crushed. They are sent to the laboratory in the latter condition in amounts not generally exceeding 10 pounds. At the mines samples are also taken before and during the unloading of the cars. When samples reach the laboratory they are treated in a rolling machine and by a process of elimination reduced to lots of less than a pound each, experiments being carried on in these amounts.

About 22 pages of the booklet are devoted to methods of coal analysis. By-products of coal are divided into the three general classes, including ammonia products, crude tar and benzol products. A section is also given over to laboratory methods for determining the relative yield of coke and by-products in bituminous coal, by the progressive dry distillation process.

Scientific Problems Await Solution

BY HENRY le CHATELIER

THE French industries are now actively interested in attempts to solve certain scientific problems with special reference to French engineering. Among other subjects of interest to the metallurgical world are pyrometry heating, and methods of measuring hardness.

Penetrating projectiles used in the navy must have a very hard tip in order to pierce surface-hardened armor plate. Hence, in order to control the production of these projectiles, it is necessary to have a method of measuring the hardness of heat-treated steel. As a matter of fact, we have not got it. The least unsatisfactory of all that we have at present is the Shore scleroscope, which uses the rebound of a small steel projectile having a diamond-pointed end. The results are, however, not comparable, since in addition to hardness they are affected by various elementary factors, especially the shape of the pieces tested.

The study of the behavior of elastic bodies under shock is a matter of great interest, but so far as this problem is concerned, knowledge has scarcely advanced beyond where it was left by Leonardo da Vinci. The rebound amounts, on the average, to three-quarters of the height of fall, varying from 60 to 90 per cent of this height. Calculus, together with experiments, would no doubt rapidly advance our knowledge and supply means for determining the conditions under which the rebound would depend only on the hardness of the surface of the body measured.

The measurement of heat and temperatures acquires a constantly growing importance in the industries. Each one of our shops for heat-treating projectiles uses a good many pyrometers. Unfortunately, their indications are not as precise as would be desirable. One cannot use the standard gas thermometer, which is too complicated for use outside of physical laboratories. The Siemens-Callendar platinum thermometer is very exact, but too fragile for everyday use in shops. The only three types of pyrometers exclusively used in shops are the thermo-electric, optical, and calorific radiation pyrometers. But their readings are not sufficiently exact.

Their defects are not due to the capricious action of natural laws. The laws are absolutely uniform in their action, but several elementary factors or several independent variables act simultaneously, and should we happen to neglect any of these factors, or even to fail to make sure that they remain absolutely invariable, we would obtain results necessarily lacking in precision, in accordance with the greater or lesser importance of the neglected factors.

The thermo-electric force of a couple depends, above all, on the temperature at the welded joint, but also, in a lesser degree, on the law of distribution of temperatures along the conductor between the hot weld and the cold weld. This is a phenomenon which we know qualitatively, but its quantitative investigation is still to be made. The homogeneous wire heated in the middle under such conditions that the gradient of temperature differs from one part of the heated zone to the other, generates a parasitic thermo-electric force, and this phenomenon varies in intensity with the nature of the metal used.

The readings of the optical pyrometer depend on the emissivity of the bodies observed. Hitherto the emissivity of three bodies has been determined: Platinum, oxide of iron, and oxide of nickel. A good many other common bodies are still to be studied. The results obtained with a radiation pyrometer are affected by the variable distribution of temperatures in the metal box of the apparatus. This factor is yet to be studied, and it is also necessary to determine the conditions required to eliminate this disturbing cause.

The heat conductivity of materials used for walls of commercial furnaces, and also that of the masses of coal burned on the grates, are essential factors in the problem of proper utilization of combustibles. The conductivity of metals is known, but for refractory materials we have only empirical data which vary as much as 100 per cent in accordance with conditions of manufacture. There is no information at all, even empirical, as to the heat conductivity of the masses of coal; and still this conductivity is an essential factor in the important matter of the possibility of burning out the grate bars. To make these measurements really scientific, it would be necessary to carry out experiments on heaps of spherical balls of known constitution, systematically varied as to diameter and temperature. In this way it would be possible to determine the laws of transmission of heat through porous masses, of radiation, convection, and of conduction proper.

In the course of the same experiments one could determine the laws of flow of gases through masses of this character; and the results obtained would be used not only for heating, but also for the selection of molding sands and in other problems.

From an address delivered before the French Academy of Sciences.

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Industry Recruits Women Into Ranks of Labor

Modern Molly Pitcher Takes Her Place on the Firing Line of Steel Mills and Factories

IN ENGLAND, France and Canada women have been successfully employed in many shops, mills and factories for some time. They have proved eager, competent and reliable, so their initiation into American industries is not without substantial precedent. In the United States, in car shops, foundries and mills women have replaced men who have been called to the front. Employers in this country are generally pleased with the results of woman labor and have found them adepts in operating lathes, drill presses and other machine tools. The illustrations on this and the facing page were taken at various railroad shops and munition plants where the labor situation is becoming increasingly severe. In the Erie car shops, a number of machine tool hands have been replaced by women. At the plant of the Ryan Car Co. at Hegewisch, Ill., the company experimented with three women workers in jobs formerly held by men. The experiment was a decided success and additional women are being put to work as new hands are needed. Overalls are rapidly growing in favor and in fact, they are the rule rather than the exception in many plants where women are employed. As labor becomes scarcer, more and more employers will turn to women for assistance for the wheels of industry must be kept spinning rapidly to furnish the many supplies of war needed by Uncle Sam and his allies in the war against German oppression.

Courtesy of Cleveland Leader

Courtesy of Cleveland Plain Dealer

Women Handle Scrap in the Collinwood Yards of the New York Central Railroad

Copyright by International Film Service, Inc.

This Young Lady is One of the First to Don Overalls for Work in a New York Munitions Plant. Although the Employment of Women as Machine Operators in Manufacturing Plants Has Ceased to Be a Novelty in Europe, this New Angle of the Labor Problem is Comparatively New to Americans. One Remarkable Fact in Connection with the Employment of Women is that Manufacturers are Paying Feminine Workers the Same Wages Previously Paid to Men.

The Hand That Runs the Lathe, Rules the World

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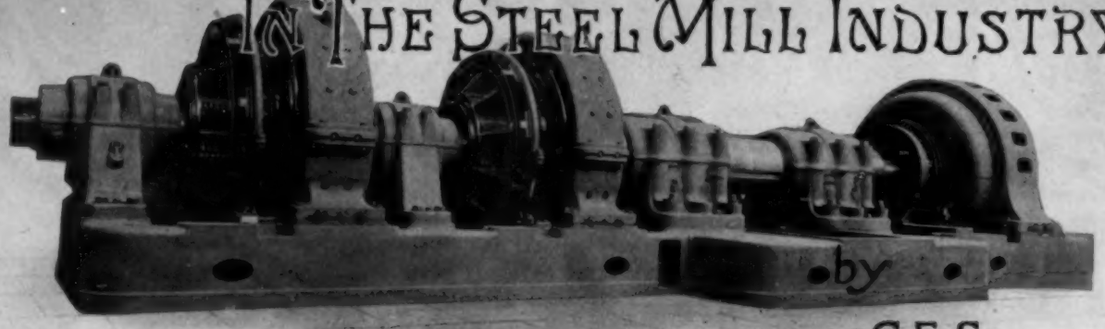
Women Have Replaced Men in a Buffalo Carshop

Recent Electrical Applications In The Steel Mill Industry



by

G. E. Stoltz

ELECTRIC drive is now accepted almost universally in the steel industry. It is true in some instances, when considering an individual unit, not much gain can be shown by the electric unit from a comparison based on guaranteed economies, but it should be remembered that the degree to which these economies are approached in actual practice depends largely upon the maintenance and attendance given the apparatus. Losses in steam traps and the condensation in the steam line continue even though the unit is not in operation so that economies which can be obtained under test conditions by no means are the basis on which a comparison should be made. On the other hand, the overall efficiency of the motors, transmission lines and generators remains practically the same, regardless of service, and when the circuit breaker is opened at the end of the day's operation, the losses are eliminated.

In reviewing a question of this kind, a broad view should be taken which considers the plant as a whole. The ease and economy with which electric power can be transmitted permit of great latitude in the arrangement of the different mills of the plant. It is also possible to locate the boiler and power equipment at the most suitable location without regard to proximity of the prime movers on the mills.

Fig. 1 indicates the growth of motor installations which has taken place over the period of 11 years. In the year 1916, 20,300 horsepower were installed on main-roll drives of 300-horsepower capacity and above. This year alone raised the total capacity installed 52 per cent and at the end of December, 1916, the total aggregate amounted to 590,000 horsepower.

The predominance of electric drive owes much of its popularity to improved economies obtained in the recently designed turbines. At first the steam was expanded from approximately 140 pounds dry, saturated to 27 inches vacuum, which is somewhat more than is obtained from steam engines. The advance of the steam turbine has been along the lines of higher vacuum utilizing superheated steam and higher boiler pressures.

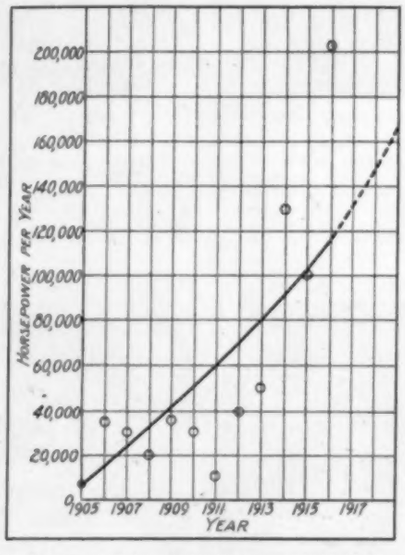


FIG. 1—CURVE SHOWING INCREASING USE OF ROLLING-MILL MOTORS

In 1910, the steel companies were buying low-pressure turbines of from 500 to 1000-kilo-volt-ampere capacity to make use of the exhaust steam from non-condensing engines. The steam was taken from the engines at atmospheric presures and exhausted into a 27-inch vacuum obtaining an economy of about 35 pounds per kilowatt-hour. A few years later practically the same size turbines were being purchased but for complete expansion of the steam from 140 pounds boiler pressure to a vacuum of 27 inches. These turbines were capable of developing a kilowatt-hour at an economy of 20 pounds of steam. Later, larger units were purchased, designed to operate on superheat and higher boiler pressures and vacuums. The Carnegie Steel Co. has purchased an 18,750,-kilo-volt-ampere turbine for 225 pounds gage pressure, 150 degrees superheat and 28-inch vacuum. This turbine will have an approximate economy of the 12 pounds per kilowatt-hour. This improved economy on the generating equipment in conjunction with the small distribution losses incurred in transmitting electric power to various points of the plant, constitutes a combination which is bound to broaden the field of application of electricity in the steel mill industry.

Two years ago there were two reversing equipments in operation in this country and one in Canada. Today there are 21 either in operation or under construction. The applications of reversing equipment are not confined to reversing blooming mills, which at first seemed to offer the largest field. The Inland Steel Co., Chicago, for example, has installed a 3-high structural mill, which is to be operated by a direct-current motor, employing the Ward-Leonard system of control. The Mark Mfg. Co., Chicago, is installing the first billet mill which will use this method of electric drive. It will permit of a wide variety of product to be rolled without changing rolls. A 60-inch universal plate mill is the largest equipment which has been purchased to date. It will be required to roll 15½ x 62-inch ingots weighing 19,000 pounds to ⅛ x 58-inch plates.

The largest engine-driven units have a torque rating ranging between 900,000 and 1,200,000-foot pounds. However, with electric drive, there seems to be a tendency to install larger units, and at present, the larger equipments are capable of developing torques of 1,200,-

Presented at a meeting of the Association of Iron and Steel Electrical Engineers at Philadelphia, May 5, 1917. The author, G. E. Stoltz, is steel mill engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

000 to 2,000,000-foot pounds. The electrical equipment shows no sign of distress even when taking a 4 to 5-inch draft on 22-inch ingots. The motors are not only capable of making this reduction, but it is possible, after bringing them to rest during the pass, to finish the pass without backing up.

Electric Drive for Alloy Steels

A number of electrically driven mills are used in rolling alloy steels. It is impossible to handle these special steels with the same dispatch as mild steel. On this class of service, large tonnages are not obtained, but it is important, however, to be able to have the prime mover under complete control of the operator. Due to the difficulty of rolling this high-grade steel, greater delays are incurred and it is impossible to smooth out the peaks and draw a constant load from the power house as can be done when large tonnages of mild steel are rolled. Fig. 3 is taken on a 34-inch mill rolling alloy steel. The curve was started with a flywheel set completely up to its maximum speed and drawing friction load from the power lines. A maximum input of 1350 kilowatts is shown. If the ingots follow each other with only a short interval, the input to the equalizer set will not vary over so wide a range, but would be nearly constant at the higher value.

One of the most interesting installations recently made is that of the Inland Steel Co., Chicago, which is outlined in Fig. 4. This constitutes a compact arrangement of the boiler equipment, two 6250-kilo-volt-ampere turbines, two 1000-kilowatt motor-generator sets for auxiliary motors, a 40-inch reversing blooming mill equipment and a combination unit to operate the 32-inch roughing reversing mill and the 28-inch, 3-high finishing structural mill. The aggregate peak-load capacity of the prime movers on the three mills is 31,000 horsepower, but with the proper flywheel effect it is possible to diversify the peaks and smooth out the load so that the two 6250-kilowatt turbines carry the entire load, including the auxiliaries. Instead of supplying a separate flywheel set for both the 32-inch and the 28-inch mill, the equalizer equipment has been combined into the one unit. This unit consists of an alternating-current driving motor, a flywheel and a separate generator for each of the two mills. In this manner it has been possible to reduce the capacity of the alternating-current motor and the flywheel to a reasonably small amount.

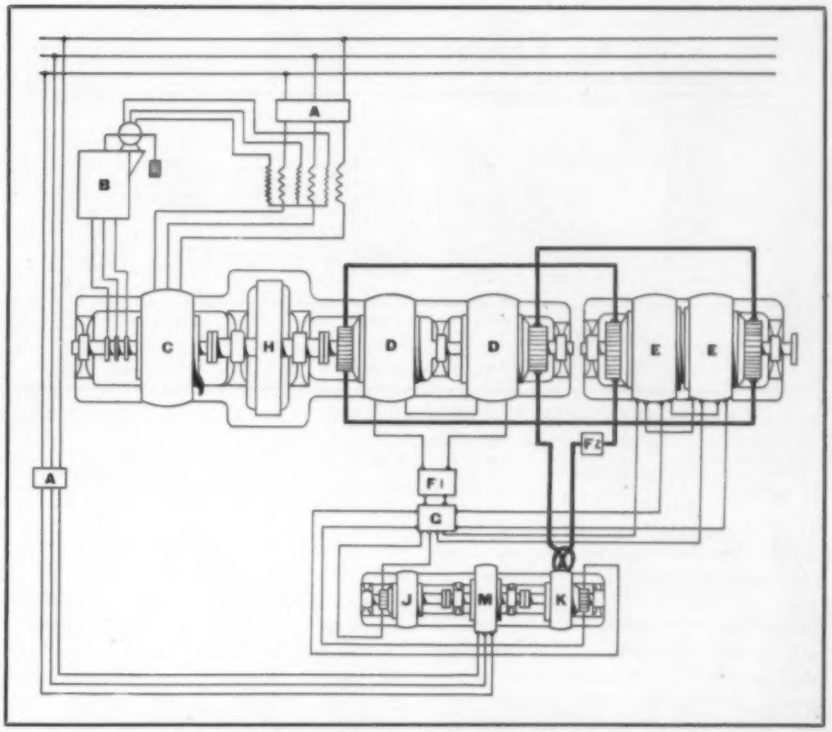


FIG. 2—SCHEMATIC DIAGRAM OF CONNECTIONS FOR DOUBLE-UNIT, REVERSING-MILL MOTOR

A, Oil circuit breaker with no-voltage and overload trip; *B*, Automatic liquid slip regulator; *C*, Alternating-current, wound-rotor induction motor; *D*, Direct-current, separately-excited generators; *E*, Direct-current, separately-excited motor; *F*, Circuit breakers, 1—Generator fields, 2—Main circuit; *G*, Field controller; *H*, Flywheel; *J*, Shunt exciter for generator and motor fields, separately excited by the main direct current circuit; *M*, Alternating-current, squirrel-cage induction motor.

Bloom Shear Operated by Direct-Coupled Motor

Ordinarily, bloom shears are equipped with flywheels and clutch so that they can be driven by a continuous running motor, the operator merely closing the clutch when it is desired to make a cut. The problem of designing a clutch which will successfully withstand the severe service met with on large bloom shears sometimes becomes rather difficult. In the case described in this paper, the bloom shear was designed to cut 108 square inches of metal at 1600 degrees Fahr., having a maximum opening of 10 inches. The shear was equipped with an 8600-pound flywheel and driven by a 200 - horsepower alternating - current wound-rotor induction motor. The gear was arranged to obtain 14 cuts per minute. In order to obtain an idea of what success could be obtained by a motor which would start and stop for every cut, the flywheel was removed and

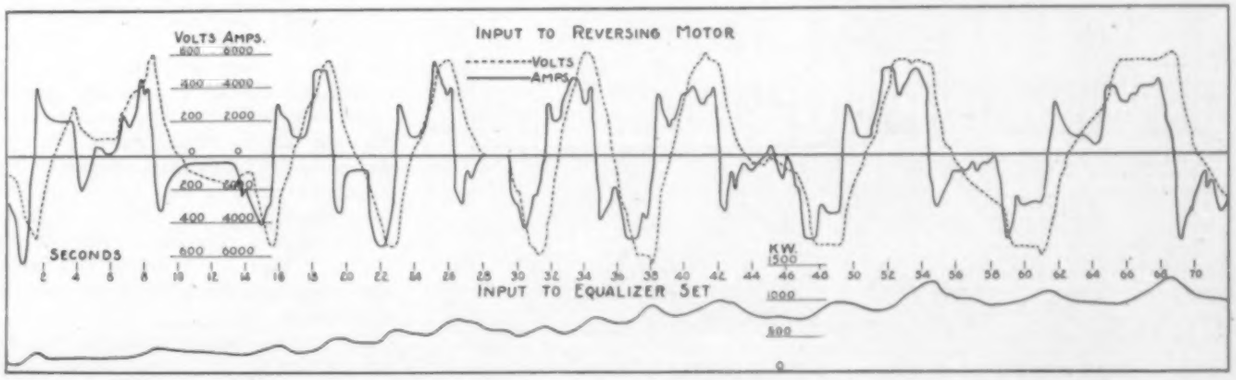


FIG. 3—CURVE SHOWING INPUT TO REVERSING MOTOR

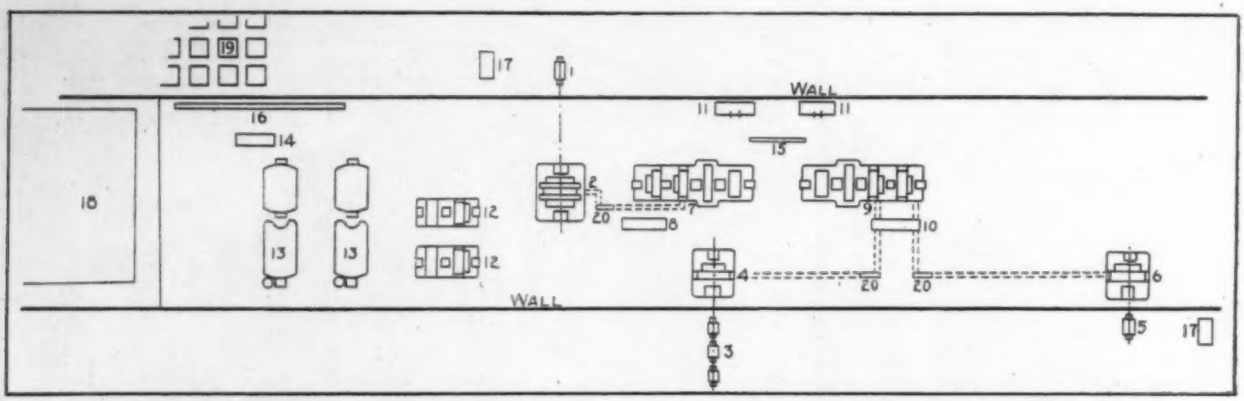


FIG. 4—ARRANGEMENT OF BOILER AND ELECTRICAL EQUIPMENT IN INLAND STEEL INSTALLATION

1, 40-inch, 2-high blooming mill; *2*, Double-unit reversing motor; *3*, 28-inch, 3-high structural mill; *4*, structural mill motor; *5*, 32-inch, 2-high roughing stand; *6*, Reversing motor; *7*, Motor-generator set, No. 2 motor; *8*, 3-piece exciter set; *9*, Motor-generator set No. 4, No. 6 motors; *10*, four-piece exciter set; *11*, Slip regulator; *12*, 1000 kilo-volt-ampere, motor-generator set; *13*, 6250 kilo-volt-ampere turbo; *14*, Exciter, motor-generator set; *15*, Switchboard; *17*, Operator's pulpit; *18*, Boiler room; *19*, Soaking pits; *20*, Main direct-current breaker.

a 180-horsepower, direct-current motor was coupled direct to the shear. A series of tests were obtained, shearing various sizes of billets. Fig. 5 graphically shows the operation of the shear when cutting five 4 x 4-inch billets at one stroke. During the series of tests, some cuts were made in which six 4 x 4-inch billets were sheared; others, two 6 x 6-inch billets were sheared.

The temporary motor gave satisfactory evidence that the scheme was feasible, so that a 350-horsepower, direct-current, 250-volt motor designed to operate at 175 to 200 revolutions per minute has been ordered to be permanently connected to the shear. With this motor will be supplied the necessary magnetic control which will provide dynamic braking for quickly bringing the shear to rest. It will be noted from the speed curve that the rate of acceleration obtained with the temporary motor is 150 revolutions per minute per second and that the shear is operating at full speed approximately two seconds before the knife touches the metal. The rate of retardation shown is 42 revolutions per minute per second, which will be considerably improved when the permanent motor is installed. The temporary motor is provided with light dynamic braking and solenoid brake, which allows the motor to drift somewhat. The dynamic braking circuit of the permanent motor will be adjusted to obtain approximately the same rate of retardation as is now obtained during acceleration.

The present motor operates at the rate of five to seven cuts per minute, but with the new motor the same output can be obtained as was contemplated when the shear was originally designed. No difficulty is encountered in bringing the motor to full speed before starting the cut, as even with the temporary motor, its full speed was obtained while the knife moved ¾ inch. It will be noted from the current graphic curve that the input drops back to friction load approximately two seconds before the knife starts shearing the metal.

When the new motor is installed, 400 horsepower seconds of energy will be lost in accelerating the shear to a speed corresponding to 200 revolutions per minute on the motor. This will require that the motor be operated at 50 per cent overload for ¾ seconds to bring the shear up to full speed, which is entirely practical. Although this loss is obtained every time a stroke is made, it should be remembered that the shear is at all times shut down when it is not actually required to cut metal. On the other hand, a shear operated by a continuous running motor is drawing energy from the power circuit practically all of the time in order to overcome the shear friction and windage of the flywheel, which in this case, amounted to 50 kilowatts. In other words, the alternating-current, motor-operated shear would only need to run idle for six seconds per stroke in order to dissipate the same amount of energy as is lost in bringing the direct-current motor and shear up to full speed. The delays which often occur in rolling mill practice in almost every case are great enough to make the direct-current motor operated shear a more economical proposition.

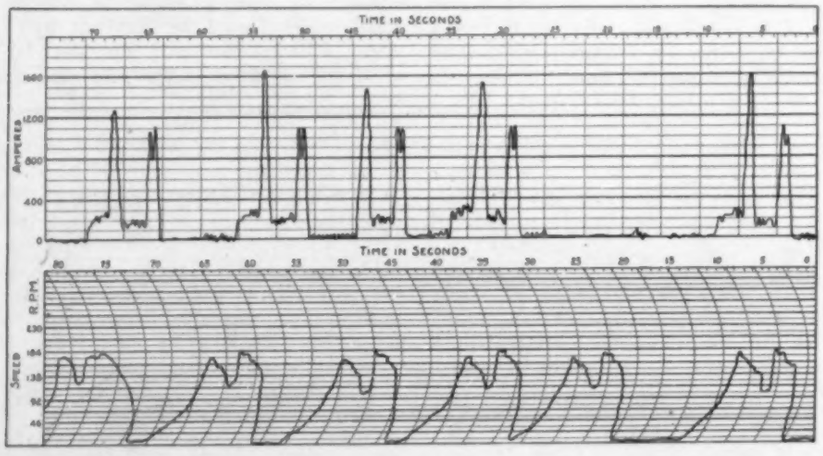


FIG. 5—CHARACTERISTIC CURVE OF DIRECT-CURRENT, MOTOR-OPERATED BLOOM SHEAR

However, the direct-current motor shear has certain disadvantages, one of which is the increased transforming capacity required in motor-generator sets or rotary converters transforming alternating-current power to low-voltage, direct-current power. This is not any great disadvantage in a large plant as the load is very intermittent and the peaks, such as shown on the graphic curve, are not more than two seconds duration, so that they would diversify with other loads of the substation and would not prove to be a burden. Often when short billets are sheared, the shear is left running continuously so that the starting peaks are entirely eliminated. This would obviate the losses due to acceleration.

The main feature, however, to be brought out is that if the clutch design presents undesirable features, it is en-

tirely feasible to omit it as well as the flywheel and utilize a direct-current motor coupled directly to the shear. In doing this, no difficulty is encountered in the correct design and successful operation of the electrical apparatus.

It has been found desirable to install adjustable-speed motors on mills of the same character as merchant mills in order to roll a wider range of material at economical speeds. Also, at times it is difficult to select the exact speed at which it is desirable to operate the mill and for this reason, an adjustable-speed equipment is installed so that a slow speed can be obtained when the mill is first started. The speed may be increased as the crew becomes more expert in handling the material. The cost of such an equipment over that of a constant-speed motor is quite appreciable, but the advantages gained are such that the first cost of installation is of small importance. Many papers have been written describing different methods of obtaining speed adjustment on alternating-current motors, but since these equipments are comparatively new it is thought that graphic curves of several installations which have been operating long enough to demonstrate the reliability of this method of drive, would be of interest.

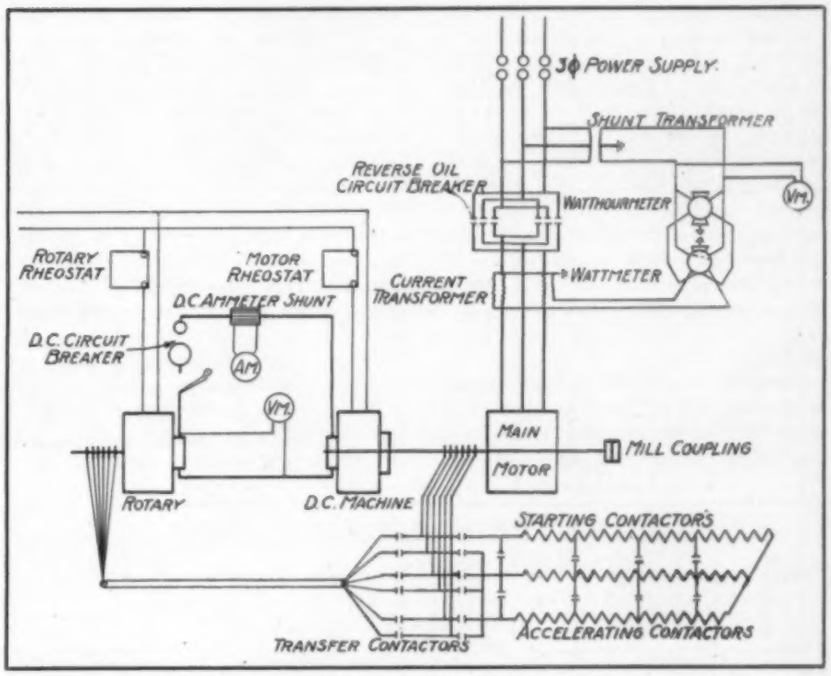


FIG. 6—DIAGRAM SHOWING CONNECTIONS FOR CONSTANT AND VARIABLE SPEEDS

Prominent Types of Drives

The most prominent types of drives are the Scherbius and rotary converter methods employed both on 25 and 60-cycle circuits. The Scherbius scheme is usually confined to the constant torque method; the rotary converter scheme can be applied equally well either to constant horsepower or constant torque requirements. The rotary-converter scheme generally makes a better commercial proposition when employed as a constant horsepower equipment as usually it is found that it is less expensive to couple a direct-current motor directly to the main motor than to install a motor-generator set which would return the slip energy to the main power circuit. The reliability and scheme of operation is the same whether constant horsepower or constant torque method is used. However, the losses are less in constant horsepower system than in the constant torque, as the direct-current motor on the main shaft utilizes the slip energy as mechanical power, while with the constant torque scheme, this energy is circulated through the auxiliary equipment and returned to the main power circuit. The constant horsepower scheme also has the advantage of increased torque at low speeds. This feature is important where heavier drafts are taken on the steel rolled at slow speeds. The decreased flywheel effect is compensated for by the slower rotating speeds. The constant torque equipment is of advantage where it is important to keep the overall length of the main drive to a minimum as the auxiliary equipment can be located at any suitable point in close proximity to the mill. A constant torque scheme also permits the manufacturer to confine the auxiliary apparatus to a small number of units which can be applied to all main rolling-mill motors. This is important where a special regulating machine is employed such as is necessary for the Scherbius installations. For example, if in one instance it is desired to drive a mill with a 1000-horsepower motor operating at 300 revolutions per minute and another mill by a 1000-horsepower motor operating at 200 revolutions per minute, the constant torque method of regulation would enable the manufacturer to use the same regulating motor; with the constant horsepower scheme, the regulating motor would be coupled to the main motor so that it would be necessary to design a 300 revolutions per minute machine for the first motor and a 200 revolutions per minute machine for the second. However, with the rotary-converter scheme this is not of much importance as the direct-current motor has such a wide field of application as a motor alone that no difficulty is obtained in making a selection for any particular regulating set.

Fig. 6 is a diagram of the connections showing the apparatus employed for a

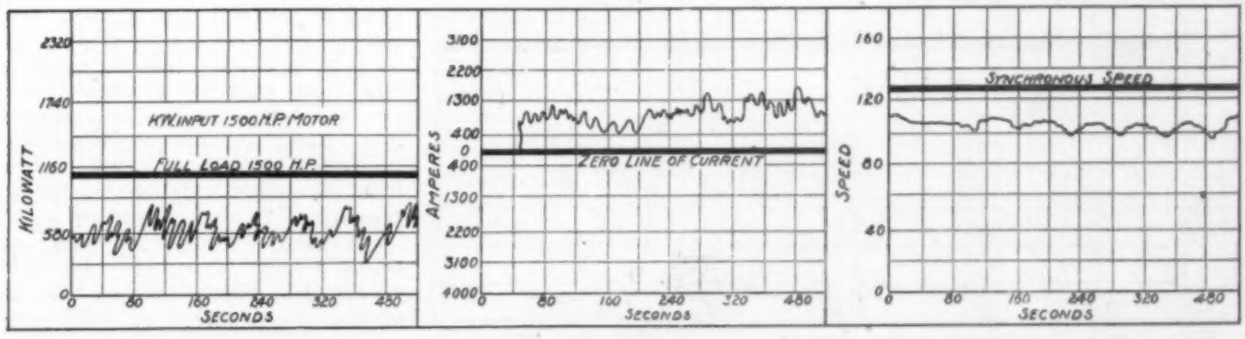


FIG. 7—CHARACTERISTIC CURVES OF SYNCHRONOUS-SPEED, CONSTANT-HORSEPOWER, ADJUSTABLE-SPEED SET

constant horsepower scheme. The power lines are brought to the primary of the main mill motor through one of the two circuit breakers. This enables the operator to obtain either forward or reverse operation of the mill. The secondary is first connected to the starting resistance and may be operated in this manner if normal speed is desired. When it is necessary to use the auxiliary equipment, the transfer switch is thrown to the rotary converter and the field of the direct-current machine is built up to a value corresponding to the speed desired on the mill. The size of the rotary converter and direct-current motor is fixed by the amount of speed adjustment desired. In other words, if the main motor has a capacity of 1000 horsepower and it is desired to obtain a 40-per cent speed reduction, the auxiliary apparatus would have a capacity of 400 horsepower. With an equipment similar to that shown on the diagram, 1000 horsepower would be obtained throughout the speed range. With the constant torque scheme, instead of having the direct-current motor connected to the main motor, the rotary converter would return its energy to the main power circuit through a separate motor-generator set. In this case, the equipment would have a rating of 1000 horsepower at the high speed and 600 horsepower at 40 per cent below synchronous speed.

From this diagram the simplicity of this scheme is apparent as no special apparatus is required, and the same reliability of operation should be obtained as from the separate units themselves. In other words, this scheme is simply the combination of standard apparatus, each unit of which has been used in steel mill service for a large number of years. The windings on the machines and entire scheme of connections are simple, so that the ordinary operator can quickly locate any trouble which may occur and repair the same with dispatch. Recently, two 50-cycle equipments were installed by the Llewellyn Iron Works on merchant mills. Operation of rolling mills is a new departure for this company and it was highly desirable to have the simplest type of arrangement to meet their requirements. Their electrical man, although not having any previous operating experience in steel mills, installed these equipments and placed them in operation before the manufacturer of the apparatus was aware that they were even installed.

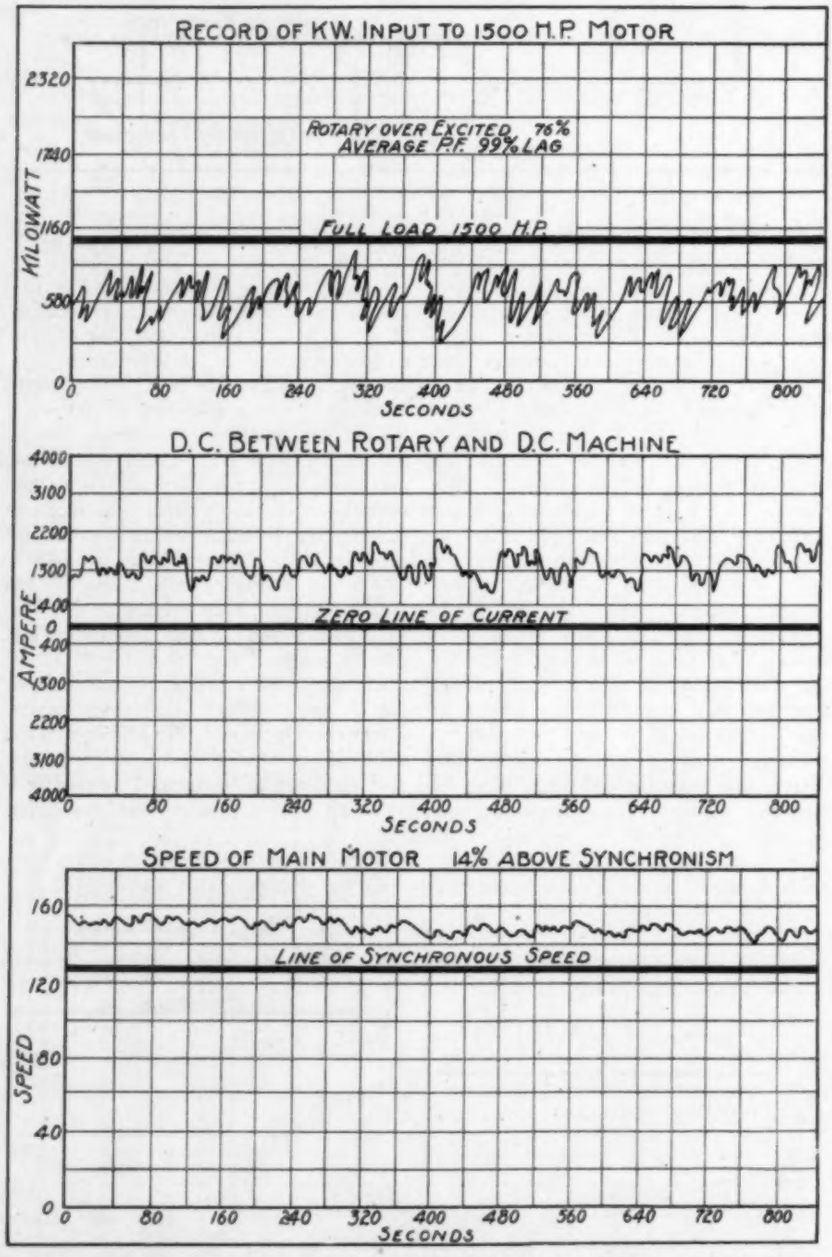

RECORD OF KW. INPUT TO 1500 H.P. MOTOR
ROTARY OVER EXCITED 76%
AVERAGE P.F. 99% LAG
FULL LOAD 1500 H.P.
KILOWATT
2320
1740
1160
580
0
0 80 160 240 320 400 480 560 640 720 800
SECONDS
D.C. BETWEEN ROTARY AND D.C. MACHINE
ZERO LINE OF CURRENT
AMPERE
4000 3100 2200 1300 400 0 400 1300 2200 3100 4000
0 80 160 240 320 400 480 560 640 720 800
SECONDS
SPEED OF MAIN MOTOR 14% ABOVE SYNCHRONISM
LINE OF SYNCHRONOUS SPEED
SPEED
160 120 80 40 0
0 80 160 240 320 400 480 560 640 720 800
SECONDS

FIG. 8—CHARACTERISTIC CURVES OF SYNCHRONOUS-SPEED, CONSTANT-HORSEPOWER, ADJUSTABLE-SPEED SET

The reliability of any equipment bears a very close relation to its simplicity, and although this apparatus will operate equally as well above synchronism as below, to date no effort has been made to operate within the range of natural slip of the main motor. On rolling mills where it is important that the highest degree of reliability be obtained, the need of operating within a small degree of synchronism is not of sufficient importance to warrant the introduction of additional apparatus to obtain this feature. In other words, the addition of the auxiliary apparatus complicates the entire scheme, thereby reducing its reliability and increasing the mill interruptions. It it is desired to operate at synchronism this can be done with the main motor alone, so that ability to operate at this speed with the auxiliary equipment is, in most cases, of more academic interest than of any real importance.

How the Curves Were Made

The accompanying curves were taken with graphic instruments, the paper traveling at a speed of 1 inch in 80 seconds. The speed of the paper in the three meters was kept as nearly constant as is possible to obtain on instruments of this type, but no effort was made to match the instantaneous values obtained. It is not our purpose to show a performance which can be obtained on a test floor, but to record actual operating conditions as are found in mill practice.

Fig. 8 shows the performance of a 1500 horsepower, 25-cycle equipment driving an 18-inch structural mill equipped with flywheel. This mill was rolling I-beams when the curve was taken and it will be noted throughout whether operating above or below synchronism, that it was necessary to have a natural slip sufficiently great to cause

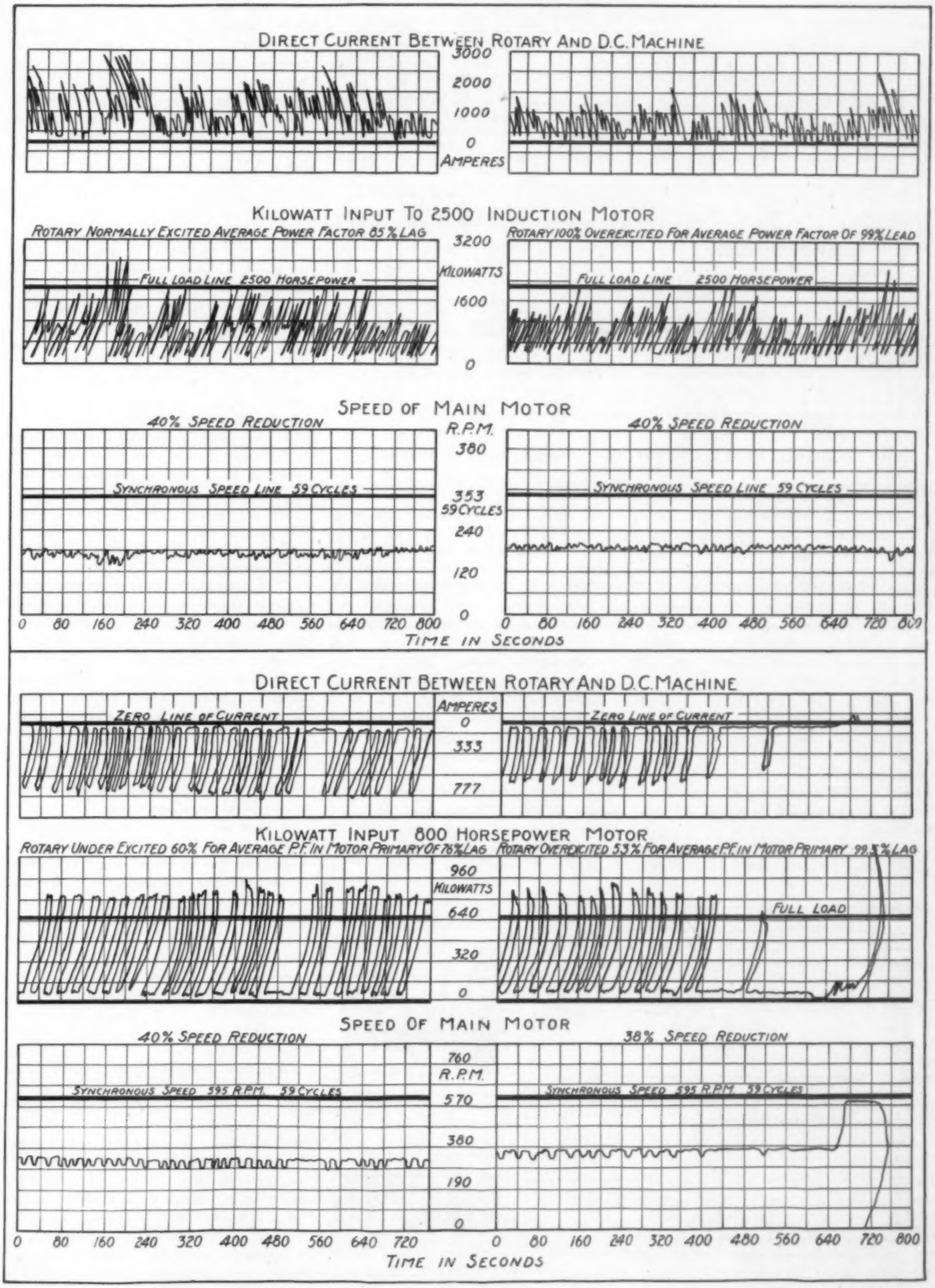


FIG. 9—CHARACTERISTIC CURVES OF 2500-HORSEPOWER, 360-REVOLUTIONS-PER-MINUTE, SYNCHRONOUS-SPEED SET
FIG. 10—CHARACTERISTIC CURVES OF 800-HORSEPOWER 600 REVOLUTIONS-PER-MINUTE, SYNCHRONOUS-SPEED SET

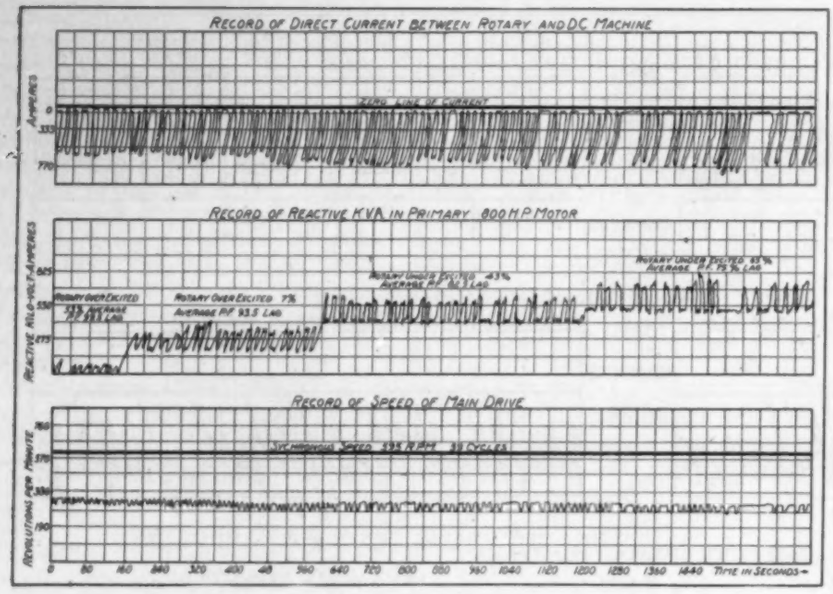

RECORD OF DIRECT CURRENT BETWEEN ROTARY AND D.C. MACHINE
AMPERES
ZERO LINE OF CURRENT
RECORD OF REACTIVE K.V.A. IN PRIMARY 800 H.P. MOTOR
REACTIVE KILO-VOLT-AMPERES
ROTARY OVER EXCITED
ROTARY OVER EXCITED 7%
AVERAGE P.F. 93.5 LAG
ROTARY UNDER EXCITED 23%
AVERAGE P.F. 80.5 LAG
ROTARY UNDER EXCITED 33%
AVERAGE P.F. 75% LAG
RECORD OF SPEED OF MAIN DRIVE
REVOLUTIONS PER MINUTE
SYNCHRONOUS SPEED 525 R.P.M. 35 CYCLES
TIME IN SECONDS

FIG. 11—CHARACTERISTIC CURVES OF 800-HORSEPOWER ADJUSTABLE-SPEED SET

the flywheel to absorb the peak loads. This particular curve was taken with the motor operating at 14 per cent above synchronism and the main features shown on these curves are that a full load slip of 10 per cent is obtained in the same manner and with the same ease as below synchronism. It should also be noted that the power factor of this motor has been corrected to 99 per cent lagging when operating at approximately 50-per cent full load. This is obtained with the equipment operating above synchronism and in no way introduces instability, even though the speed drops to 142 revolutions per minute which is within 4½ per cent of synscronism.

This equipment was installed to operate below synchronism, but it was found that the scope of the mill would be materially increased by operating at greater speeds than were first anticipated. To the writer's best knowledge, we believe this is the first equipment to give a practical and successful mill demonstration of the feasibility of operating above synchronism for an appreciable length of time.

Further proof of the stability of this equipment is shown in Fig. 7, curves of which were obtained with the field switches of the rotary and the shunt field of the motor open. The excitation of the rotary was taken from the main motor, which explains the lagging power factor of 60 per cent. It will be noted from the speed curve that the apparatus was entirely stable as no unusual fluctuations were obtained. This

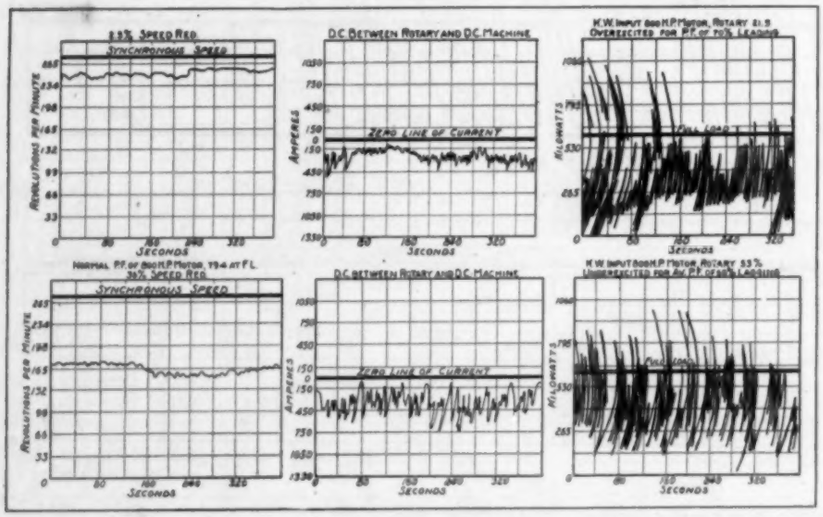


FIG. 12—CHARACTERISTIC CURVES OF 800-HORSEPOWER, ADJUSTABLE-SPEED SET

indicates that if the equipment was under operation and the excitation circuit should fail, the equipment would continue under operation simply approaching synchronous speed. The direct-current motor, of course, has a certain amount of excitation which it receives from its series field.

Adjusting the Speeds

It is entirely possible to adjust the speed either up or down while the mill is in operation, the limitation being merely the capacity of the apparatus. If metal is being rolled while a change is taking place, the motor would not only have to carry the mill load, but would have to speed up the equipment which would increase the total load of the motor, in proportion to the amount of flywheel effect incorporated in the drive. Where no flywheel is used, the change can be made quite rapidly as is the case with a direct-current, adjustable-speed motor ordinarily used for machine tools. On one equipment having a speed range of 175 to 350 revolutions per minute, the mill was carried through its entire range from 175 revolutions per minute to its maximum speed in 22 seconds.

In adapting auxiliary equipment to induction motors, it is important that the overload capacity of the outfit is in no way limited by the auxiliary equipment.

In Fig. 9 curves were taken on a 2500-horsepower motor driving the intermediate stands of a flat mill. No flywheel is used so the motor is required to absorb the instantaneous peak loads. No doubt this equipment and the 800-horsepower outfit described later which drives the finishing stand are handling the most severe loads of any regulating equipment installed. The two sets of curves in this figure were taken to illustrate that the operation is in no way hampered when the rotary excitation is increased from normal to a leading value. Instantaneous loads of 135 per cent are shown, and during the entire operation, the commutation on the rotary and direct-current motor was as indicated by Fig. 9.

Equipment Stable Under Overload

Fig. 10 graphically shows the character of the load on the finishing mill. The instantaneous peaks in each pass range from 120 to 145 per cent load. In one case, the rotary is over excited to give approximately 100-per cent power factor on the primary of the main motor; in the other case, the rotary is under excited to decrease the power factor to 76-per cent lag. Although the equipment is under extreme overload conditions, the speed curve shows that the equipment is absolutely stable.

The character of commutation is

shown in Fig. 10. Quite often metal is rolled in this mill which increases the load on the equipment to values ranging from 165 to 185-per cent load with each pass. At the extreme right on the speed curve it will be seen that the set was reduced from 585 to 375 revolutions per minute in 13 seconds—at the rate of 16 revolutions per minute per second. While this operation was taking place, the input to the main motor dropped to zero and the direct-current motor developed a slight generative current.

In order to graphically record the power factor of the primary of the main motor, the wattmeter was connected to read wattless kilo-volt-amperes, Fig. 11 shows the equipment in operation with the rotary excitation manipulated to record a power factor over a range of 75 per cent lagging to 99½-per cent lagging. No change in actual operation of the mill is noticeable while this manipulation is taking place.

May Correct Power Factor

Ordinarily, the rotar is so designed that its slip-ring voltage corresponds to the secondary voltage of the induction motor at the same frequency. If the rotary field current is built up to a value which saturates the field, no further gain can be made in power factor connection by increasing the rotary field current. However, if power factor correction is imperative, the rotary can be designed with normal field low on the saturation curve so that considerable power factor correction can be obtained.

This point is illustrated by Fig. 12 which shows the average power factor of the main motor as 70-per cent leading. It is well known that the tap coils of a rotary converter are subject to greater heat than the remainder of the armature when the rotary is over-excited to any great extent, but it should be remembered that this heat is largely dissipated in the leads to the slip rings. Practically all of the curves shown indicate that the ordinary steel mill load is sufficiently intermittent to not make heating a serious matter. There is no difficulty in operating a rotary converter at 97-per cent leading power factor which would give corrective kilo-volt-amperes 24½ per cent. This would increase the power factor of a motor whose normal power factor is 80 per cent to 91.5 per cent.

The curves on Fig. 12 were taken on a constant torque equipment which is arranged so that it can be operated in conjunction with either an 800-horsepower motor driving a 10-inch merchant mill, or with an 1100-horsepower motor driving a 20-inch bar mill. The locked secondary voltage of the 1100-horsepower motor is 417 volts and the locked voltage of the 800-horsepower motor is 552 volts. At first, it was felt that it would not be possible to operate this adjustable speed equipment satisfactorily with both motors, due to the wide range of voltage, but after the equipment was installed this discrepancy proved to be no handicap.

Large Overload Capacity

The two sets of curves on this equipment show operations at both 35-per cent speed reduction and 2½-per cent speed reduction. Momentary overloads of 60 per cent occur with the power factor either 60-per cent lagging or 70-per cent loading. The speed curves in both cases give no indication of instability.

We believe that these curves will demonstrate that reliability and unusual flexibility are obtained from a scheme which readily lends itself to power-factor correction and overload capacity and is entirely practical with an equipment consisting of simple, well understood standard machines with which ordinary steel mill operators have been working and manufacturers have been perfecting for a long period of time.

The operation has been shown above and below synchronism within 2½ per cent of synchronism on a 60-cycle equipment and within 4½ per cent on a 25-cycle outfit. The power factor is shown to be adjusted over a range of 60-per cent lagging with rotary field switch open to 70-per cent leading with no effect whatsoever on the stability of the equipment. The speed can be adjusted when rolling. One example is shown of an idle mill dropping through its entire range in 13 seconds. Momentary overloads of 160 per cent have been shown with good commutation and its simplicity is of such a character that expert help is not required for installation or repairs in case of breakdown.

Obituaries

Casimer von Philp, identified with the Bethlehem Steel Co. since 1890 and chief engineer for that company for a number of years at Ocean City, N. J., died lately following an attack of apoplexy. Mr. Von Philp was born in Stockholm, Sweden, 64 years ago and came to this country in 1879. He was of noble birth, a direct descendant of an ancient Scottish family, the ducal house of Philp, from which sprang the present house of the Duke of Leeds.

Frederick Pain, code compiler for the United States Steel Corp., died July 12 at his home in Bayonne, N. J., aged 69 years.

Fraray Hale, treasurer of the International Silver Co., Meriden, Conn., died at his home in Wallingford, Conn., July 12, after an illness of several weeks, aged 60 years.

Daniel A. Wightman, for 20 years manager of the Pittsburgh Locomotive Works until his retirement seven years ago, died recently at his home in Warren, R. I., aged 71 years.

John P. Ford, president and treasurer of the Consolidated Mfg. Co., Inc., Hartford, Conn., died in the Hartford hospital, lately, from injuries received by being struck by an automobile June 16, aged 78 years.

John S. H. Stokes, assistant sales manager for the Gilbert & Barker Mfg. Co., Springfield, Mass., gas machines, died suddenly in Hartford, Conn., where he was passing a vacation, July 12, aged 25 years.

George H. Cowan, Oak Park, Ill., consulting, mechanical and electrical engineer, died recently after an illness of five weeks. Mr. Cowan was born in 1847 and served in the army for four years during the civil war.

Hon. B. Herbert Woodsum, founder of the B. H. Woodsum Co., South Braintree, Mass., maker of tacks and nails, was instantly killed in an automobile accident in Topsfield, Mass., July 11. He was 60 years of age.

Horace L. Chapman, long one of the prominent factors in the Ohio coal trade, died recently at his home in Columbus, O. He was heavily interested in the Tropic Iron Co., Jackson, O., until its dissolution, and at the time of his death was vice president of the Globe Iron Co., Jackson, O. He was Democratic candidate for governor of Ohio about 20 years ago.

J. Clarke Kennedy, uncle of Julian Kennedy, the iron and steel engineer, died at his home in Youngstown, O., recently, aged 80. Mr. Kennedy engaged in the iron and steel business shortly after his return from service in the Civil war. He was actively connected with the construction and operation of the old Brier Hill furnace and furnaces at Struthers, O., Lowellville, O., and in the Buffalo and Pittsburgh districts.

Price Control Nears Definite Form

Conference Between Government Officials and Steel Makers Paves Way For Sweeping System of Price and Cost Regulation—Requirements of Private Buyers to be Included—Liberal Attitude Pleases Producers

WASHINGTON, July 17.—Despite the general agreement reached between steel manufacturers and the government regarding the policy governing prices and the distribution of tonnage more or less uncertainty continues to manifest itself in the steel trade circles and probably will not disappear until actual figures and allotments have been determined. The matter of fixing prices rests largely with the President and he will be unable to act until the federal trade commission submits its report based on its investigation as to the cost of production in the iron and steel industry. The commission expects to complete its report in approximately two weeks. Distribution of tonnages in all probability will follow the lines now established, only on a much broader scale. By the existing system most of the requirements of the government for steel are placed with the mills according to their capacities on the recommendation of the committee of the American Iron and Steel Institute which conferred with the government representatives last week. This committee has its headquarters in Washington. Nothing definite has been done with respect to the establishment of a central purchasing board.

Definite Prices Not Discussed

Repeated assurances from authoritative sources have been given that the question of prices was discussed only in an academic sense at last week's conference. Secretary of War Baker in his statement that "pending the inquiries of the federal trade commission, no consideration was given to the subject of price" evidently meant no actual figures were mentioned. The immediately practical point taken up related to mill conditions and capacities, involving requirements for this government and its allies. While, it is claimed, no discussion was given to the matter of prices for supplies purchased by the allies, the impression has been given that this question will come up for future settlement. It is equally true nothing was done in the way of discussing actual prices for private consumers, but it is plain that it is proposed by the government to regulate prices, also to apply to their purchases. This is borne out by the statement of President Wilson last Wednesday addressed to the mine operators and manufacturers of the United States, "We must make the prices to the public the same as the prices to the government."

Steel manufacturers left the conference in an optimistic frame of mind. It was evident they felt the situation had been cleared considerably. The positive assurances of the government's representatives that "with the understanding that the price, when fixed, would insure reasonable profits and be made with reference to the expanding needs of this vital and fundamental industry" removed a great deal of apprehension. Further cause for gratification was prompted by the statement of the President that "a just price must, of course, be paid for everything the government buys". The President went on to say that "by a just price I mean a price which will sustain the industries concerned in a high state of efficiency, provide a living for those who conduct them, enable them to pay good wages, and make possible the expansions of their enterprises which will from time to time become necessary as the stupendous undertakings of this great war develop. We could not wisely or reasonably do less than pay such prices. They are necessary for the maintenance and development of industry; and the maintenance and development of industry are necessary for the great task we have in mind." The government, the steel manufacturers were told, in fixing prices proposes to take all vital elements into consideration. These will include the cost of raw material, such as coal and coke, alloys, as well as wages, salaries, expenditures for improvements and expansion of plants, welfare work for employes, etc.

Manufacturers Demonstrate Patriotism

The manufacturers entered the conference determined to show that the steel industry was prepared to meet President Wilson's view that "patriotism leaves profits out of the question." They denoted their entire willingness to comply with any reasonable demand of the government and to assist in every possible way in winning the war. The apparently liberal attitude of the government representatives, at least some of them, was pleasing if not actually surprising to the manufacturers. This went a long way toward making it possible for the statement that the outcome of the conference "was most encouraging". Assurances again were made at the conference by the steel producers that "their entire product would be available for the need (of the government) and that they were doing everything possible to stimulate an increased production and speed deliveries." The representatives of the government in turn assured the members of the steel committee "that it was the intention of the government to distribute the war requirements over the entire iron and steel producing capacity of the country." While, as has been indicated, the entire situation is not clarified, it seems plain that it is approaching that end.

Far-Reaching Regulation Planned

The conference has been accepted as a precursor looking to the adoption of a policy of regulation toward other industries. Prices for products of all kinds required in the manufacture of war supplies will be fixed. Those relating to coal, coke, copper, etc., are expected to be determined in the near future. If such a condition is brought about, it is evident the steel manufacturers will be in a position to produce more cheaply than at present. The prices to be applied to supplies bought directly by the government or used in the production of materials it requires, it is believed, will be based on conditions at individual plants and therefore may not be of a uniform character.

The attitude of steel manufacturers is that they propose to do everything they can to stimulate production to the highest point possible under government regulations. While they believe they will be able to produce satisfactory results, it is known they stand ready to ask the government to take over their properties if they find federal control makes it impossible to operate without loss. The steelmakers in such case would be compensated by going to the courts after the war when government control would cease.

Tonnage will be produced in the greatest quantity within the shortest time possible, according to the needs of the government. The total amount needed has not been given out. Obvi-

ously it will be huge. The greatest requirements are those of the United States shipping board for structural material in connection with merchant ships. The present program of the shipping board calls for perhaps 2,000,000 tons of plates, shapes and bars. The additional program, suggested by an added appropriation of $500,000,000, necessarily would call for a large quantity of steel, perhaps 1,500,000 tons. The prices of 2.90c for plates and 2.50c for shapes and bars, now being paid by the war and navy departments, have been suggested informally as those that might be permanently fixed by the government for all of its requirements of this character. But this has not been considered seriously. It has been pointed out that manufacturers cannot possibly sell this material at these figures at present operating costs.

Next to structural requirements, the greatest tonnages for the government will be shell steel. This now is being bought for 3.75c a pound. As in the case of structural material, it is insisted that the industry will have to get a higher figure in the future unless present costs of manufacture are reduced. Because of the extremely heavy tonnages of structural and shell steel wanted, particular interest is shown in the figures to be established on these materials. The trade commission's investigation, however, will cover everything from iron ore to the finished product, and it is said prices are to be established for all products from pig iron to finished steel. Because of the fact that the investigation embraces such a broad survey of the greatest industry in the country considerable doubt exists that a really comprehensive report can be completed within as short a time as is contemplated.

While within a year, it is said, demands of this government for itself and its allies, may take virtually 30 per cent of the ingot capacity of the entire steel industry, no actual basis for such an estimate is known to exist. Yet the estimate, according to government representatives, is considered to be as nearly correct as can be reached at this time. Secretary of the Navy Daniels has even said that ultimately the government and its allies will take entire output of this country for war purposes.

Among other results of the conference was one which has simplified the car-building program. This was announced by Secretary Redfield, who said that the steel manufacturers had assured car builders enough steel for speedy construction work on pending contracts, involving 2000 locomotives and 80,000 cars.

Government representatives at the conference included Secretary Baker, Secretary Josephus Daniels, Chairman Deman of the shipping board, and Bernard M. Baruch, chairman of the committee on raw materials, advisory commission, council of national defense. The steel interests present were: Elbert H. Gary, chairman of the United States Steel Corp.; James A. Farrell, president of the United States Steel Corp.; Charles M. Schwab, chairman of the Bethlehem Steel Corp.; E. G. Grace, president of the Bethlehem Steel Corp.; J. A. Burden, president of the Burden Iron Co.; E. A. S. Clarke, president of the Lackawanna Steel Co.; H. G. Dalton, president of Pickands, Mather & Co.; A. C. Dinkey, of the Midvale Steel & Ordnance Co.; J. A. Topping, chairman of the Republic Iron & Steel Co., and James B. Bonner, agent for the American Iron and Steel Institute Committee.

Plan to Centralize War Management

WASHINGTON, July 17.—With legislation before congress appropriating $640,000,000 for creating an American air fleet, providing for a minimum of 20,000 airplanes, the automotive committee of the council of national defense has begun a comprehensive industrial survey of the automotive industries, including automobile, airplane and watercraft plants. It is the purpose to make available to the government all possible information regarding manufacturing facilities and the possibilities of expansion of these plants for government work. The inventory is being taken by the industrial inventory section of the council and will be completed within two or three weeks.

The undertaking was inspired by the approaching great demand on the industries for airplane engines, motor trucks, tractors and power boats for war purposes. Although a similar inventory was taken of the automotive industry, together with many others, about a year ago by the committee on industrial preparedness, of which Howard E. Coffin was chairman, changes in the industry, along with the new information required because of the war, has made it necessary to repeat it. Particular emphasis is laid on such questions in the form as "What percentage of your normal production could you divert to government work and still conserve your own business?" "Is labor market favorable for expansion of production?" and "What products, if any, are you now making for the United States or allied governments?" "If you have no official orders, give the same information concerning any production program you have reason to believe will be asked of you."

Propose Centralized Authority

Speeding up of this and other war programs of the government would be brought about according to suggestions being made as to the reorganization of the council of national defense and its subordinate bodies. Plans looking to this end now are in the hands of President Wilson, and broadly they concern the creation of a more centralized organization, with power to purchase supplies direct. In this connection Waddill Catchings, chairman of a committee of the chamber of commerce of the United States, has issued a statement proposing the formation of a board of national defense with powers to make important decisions and to act on its own authority. He points out that there is now no board or department concerned exclusively with the concentration of all efforts toward producing materials and supplies for war. In this condition he finds much of the cause for criticism and misunderstanding concerning the part business men have so far taken in war preparations. When it is understood, he said, that there has been no general scheme and no general authority, what the advisory committees of the council of national defense have been able to accomplish is remarkable. In such a situation, it is asserted, there is much that can be criticised. The senate has been particularly vigorous in criticising the fact that the advisory committees have been interested in the companies who have received contracts for the government. That is the reason an amendment was placed in the so-called food control bill making it unlawful for any one associated with the government in an advisory or other capacity to sell their own products to the government. As a result, Senator Pomerene offered a substitute amendment merely prohibiting members of the commission or other bodies connected with the government from working for contracts in which they have personal interests. By this means the council of national

defense and its subordinate bodies would be allowed to remain intact, as has been insisted upon by the President.

Many Bids Are Taken for Navy Projectiles

Washington, July 17.—Bids have been received by the chief of ordnance, United States navy, for furnishing from 560,000 to 840,000 4-inch, 650,000 3-inch and 300,000 class B 3-inch common projectiles. The Bethlehem Steel Co. bid $9.20 each on the 4-inch shells, $4.90 each on the 3-inch common and $6.25 each on the 3-inch class B, all of which is based on 3.75c steel; the Tucker Supply Co., York, Pa., $3.85 each on 3-inch class B based on 4c steel and 17c copper; the Vermont Farm Machine Co., Bellow Falls, Va., $3.65 each on 3-inch class B based on 3.75c steel; the Roberts Filter Mfg. Co., Darby, Pa., $3.40 each on 3-inch class B based on 3.75c steel; the Ingersoll-Rand Co., New York City, $10.80 each on 300,000 of 4-inch based on 3.75c steel; the Metal Products Co., Beaver Falls, Pa., $3.47 each on 3-inch class B based on 3.75c steel; the Barge Bridgeport Co., Bridgeport, Conn., $8.13 each on 4-inch, $4.40 each on 3-inch common and $3.60 each on 3-inch class B based on 3.75c steel; the Consolidated Mfg. Co., Toledo, $2.98 each on class B based on 3.75c steel with a nominal bid of the actual cost of labor and material plus 10 per cent, guaranteeing price not to exceed $2.98 each; J. A. Vance & Co., Winston-Salem, N. C., $9.60 each on 10,000 4-inch common based on 3.75c steel, government to furnish part of copper; American & British Mfg. Co., Bridgeport, Conn., $8.40 each on 120,000 4-inch shells, $8.30 on 230,000 4-inch $8.20 each on 300,000, $8.12 each on 400,000, $8.08 on 480,000, $4.25 each on 144,000 3-inch class B, $4.20 on 225,000 3-inch class B, $4.15 each on 300,000 3-inch class B and $3.75 each on 144,000 3-inch common based on 3.75c steel; Worthington Pumping Machinery Corp., New York City, $3.14, $3.19 and $2.24 each on 300,000 class B, depending on delivery, $3.25 each on 650,000 3-inch common, $8.75 each on 560,000 4-inch common, $8.65 each for 840,000 4-inch common, based on 3.75c steel; Westinghouse Electric Mfg. Co., $9.14 each on 4-inch common; the Traylor Engineering & Mfg. Co., Allentown, Pa., $4.05 each on 400,000 3-inch class B based on 3.75c steel forgings at 48c each and copper bands at 20c; Platt Iron Works, Dayton, $4.95 for 300,000 3-inch class B based on 3.75c steel; Canadian Steel & Brass Products Co., Toronto, $4.95 each, f.o.b. Toronto, on 300,000 3-inch class B; American Car & Foundry Co., New York City, $3.23 on 300,000 3-inch class B to be delivered 5000 daily and $3.39 each for same number to be delivered 2500 daily, but not bid on government specifications; the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., $3.90 each on 4-inch common; Wagner Electric Mfg. Co., St. Louis, $3.30 each on 300,000 3-inch class B, $3.23 each on 250,000 3-inch common based on 3.75c steel.

Taking Many Bids for War Steel Supplies

The army ordnance department has awarded contracts for furnishing 1,000,000 knives each to Landers, Frary & Clark, New Britain, Conn., and to the American Cutlery, Chicago.

The commanding officer of the Frankford arsenal, Philadelphia, is receiving bids this week on 25,000 4.78-inch shrapnel case forgings, on 10,000,000 ball cartridges, caliber 0.30, model 1908, and on 64 drill cartridges for 3.8 howitzer model 1917.

The Burgess Aeroplane Co., Marblehead, Mass., has been awarded a contract by the navy department to furnish six seaplanes, six power plants and spare parts and miscellaneous supplies.

The Toledo Bridge & Crane Co., Toledo, O., has been awarded 6,000,000 3-inch cartridge cases at $8.31 each; the Driggs Ordnance Co., Inc., New York, 1,500,000 one-pounder cartridge cases at 12.45c each; Albert & J. M. Anderson Mfg. Co., Boston, 250,000 4-inch cartridge cases at $5.55 each, and the Winchester Repeating Arms Co., New Haven, 350,000 4-inch cartridge cases at $5.55 each.

No Armor Plate Plant

Washington, July 16. — Secretary Daniels has made the expected announcement that the construction of the proposed government armor plate plant at Charleston, W. Va., has been delayed indefinitely or until "some present needs of the navy are furnished". This announcement is in line with what has been expected by the iron and steel industry and by those who have been keeping in touch with the subject since the announcement first was made.

Raw Materials

Will be Provided by Steel Company of Canada—Rails for France

Toronto, Can., July 17.—The directors of the Steel Company of Canada, at a meeting held here recently, adopted a new policy which will give the company control of its own supplies of raw materials, for which it has been hitherto dependent on outside sources. It is proposed, in association with American interests to acquire certain iron ore and coal properties advantageously located in the eastern states from which the necessary supply will be drawn. The company's plans include the construction of a coke-producing plant in Hamilton, with a capacity of between 800 and 900 tons of coke per day. President Robert Hobson states work on the plant will be commenced almost immediately, and that under present conditions it will require about 20 months to complete it.

In view of the urgent need of steel rails in France, the Canadian government has arranged with the Grand Trunk Pacific railway to take up some sections on the Mountain division for shipment to France. Some of these rails will be replaced by steel taken from the adjacent Canadian Northern line, and in some cases the Grand Trunk Pacific trains will be operated over the Canadian Northern.

The Canadian government is increasing the rolling stock of the government railways in preparation for a heavy movement of the western grain crop. A contract for 1000 freight cars has been let to the National Car Co. Hamilton, Ont.

The Canadian Locomotive Co. of Kingston, Ont., has received an order for six switching engines from the Toronto, Hamilton & Buffalo Railway.

Steel Shipbuilding in New Glasgow Begun

Toronto, July 16.—The steamer WAR WASP, the first steel ocean-going steamer built in Nova Scotia was launched at New Glasgow July 9 by the Nova Scotia Steel & Coal Co. The vessel has a carrying capacity of about 2000 tons. It has been sold to the British government. A second vessel about 25 per cent larger is under construction, and third will be commenced forthwith. The citizens presented Col. Thomas Canbley, chairman of the company, with a handsome silver plate accompanied by an address expressive of their appreciation of his services in inaugurating the steel ship building industry of New Glasgow. A congratulatory address was also presented to him by the town councils of New Glasgow and Trenton.

British Steel Production Grows

Benefits of Works Extensions Forced by War Beginning to be Realized—Less Dependence to be Placed on United States for Supplies Unless Unforeseen Stringency Should Develop

Bureau of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., July 4, 1917.

NO diminution in the demand for war material of all kinds is shown, but production is steadily increasing, mainly on account of plant extensions, which, after three years of war, are beginning to materialize. Additional steel furnaces have been started lately in Sheffield. All parties concerned now realize that less dependence must be made upon America, and that the British steel works must be practically self-sufficient for war requirements. Recent statistics have emphasized this fact. While our exports show considerable reduction during May, the most striking feature was the fall in imports. Only 2500 tons of billets, blooms and slabs came into the country and less than half that quantity of ingots. The total amount of steel of all kinds imported amounted to only 39,000 tons. The most noteworthy item seems to have been wire, wire rods and wire nails.

There is an idea in Birmingham that if increased imports of American material really become imperative, the American government will arrange this with the works. In this way the British and American authorities will take the whole business in hand between them. But, for the time being, this seems to be pure assumption. The only material now coming in, in any important quantity, is wire rods, for which consumers appear to pay without hesitation whatever price is demanded. The shortage of material is avoided by the government putting a strict embargo on any production which has not a definite and direct relation to the war. It is notorious that railways and tramways are rapidly wearing out, and will have to continue doing so, until the rail mills largely put on to the making of war steel, are permitted to return to their original vocation. The importance of the food question no doubt explains why the government has lately conceded special privileges to country buyers of iron, such as distributing merchants who serve farmers and the country districts generally.

All the works in any way connected with shipbuilding such as chain and anchor works, for many years centralized in the Dudley neighborhood, are congested with business, and producing to full capacity. The general effect of the great heat prevailing during the past fortnight has been to restrict production. There are many signs of the gradual overtaking of demand by supply, and among these is the definite advice given by the coal controller to householders to lay in stocks as early as possible during the summer, in preparation for winter needs. In this matter the hot weather has been a stroke of good fortune to all concerned, because it practically stopped household consumption, and allowed a larger quantity of fuel to be diverted to the factories producing war material. The difficulty, however, is by no means got over, and some of the most important foundries in the kingdom have during the past week been obliged to exercise special pressure to obtain coal, in order to keep their cupolas adequately supplied.

Pig Iron Prices Unchanged

The somewhat anomalous position of pig iron prices has arrested for the time being a movement which commenced about a month ago among finished iron makers to obtain from the ministry of munitions a rise in their selling prices. There is a great shortage of puddled bars, which has been aggravated through the puddlers working short time, as the result of insufficient or greatly inferior fuel supplies. There is no restriction imposed upon the price of puddled iron at present.

The scrap trade is in a somewhat difficult position partly on account of shortage of trucks. But a circumstance of some effect is the recent restriction in price which rather discouraged the activity of the collector. Naturally, the scarcity of billets and bars has stimulated values of discard steel, as a basis for the production of a variety of finished steel goods. There is some evidence that holders of scrap material are keeping their stuff off the market in expectation of better prices. The finishing works could use a great deal more scrap of all sorts, if it could be had. Scotland iron and steel production appears to be expanding, as plants are enlarged.

The demand for Staffordshire pig iron is enormous, and the makers there claim to be getting the higher prices recently fixed by the ministry of munitions with difficulty. The districts which failed to get an advance are rigidly insisting upon the inclusion of the retrospective clause in all their contracts, as a precaution in the event of the advance being obtained. The smelter continues in a strong position, having no difficulty whatever in obtaining maximum prices. In fact, only the government restriction prevents the makers from getting much higher prices. The supply of forge iron in Cleveland continues in excess of requirements, so that prices are being slightly shaded. This has enabled better deliveries, especially to the allies. The warrant stock has been unaffected. The conversion of furnaces to basic production still is in progress. But the effect of this is felt almost wholly in the midland districts, of which Birmingham is the business center. Part of the great activity in the midlands is due to the enormous foundry contribution to shipbuilding and engineering, so greatly facilitated by the possession in Staffordshire of high-class pig iron, specially suitable for mill machinery and high-class engine parts. The wear and tear on the mills in all parts of the kingdom necessitates a constant supply of machinery from the midland foundries. Scotland and Wales easily consume the whole of their output upon war material, while the former district is a very good buyer from Middlesbrough. There is a great demand for East Coast hematite, while the West Coast furnaces appear to be totally unable to cope with the enormous demands upon their high-class hematites, for such purposes as armor plates, engine shafts, guns, etc.

To Extend Coke Plant

Elaborate extensions of its by-product coke and benzol recovery plants have been authorized by the Youngstown Sheet & Tube Co. These will increase the output of these plants 50 per cent and will entail an expenditure of about $3,000,000. To the present 204 coke ovens, 104 ovens will be added. The extended plant will produce about 4000 tons of coke daily. The improvements are expected to be completed within 12 months.

Americanize Men

Large Employers Adopt Various Methods to Encourage Citizenship

Americanization of its employes is being promoted actively by the iron and steel industry and machinery industry. Alien employes are being interviewed and encouraged to apply for citizenship. Some manufacturers even have established schools as an aid to the prospective citizen in obtaining his papers. The success which has attended these efforts on the part of manufacturers has been very gratifying.

Naturalization of its foreign employes was effected by the Brown & Sharpe Mfg. Co., Providence, R. I., recently, in a unique and effective way. Following a census of its employes, the company addressed a personal notice to each of its foreign employes requesting that he signify his willingness or unwillingness to become a citizen and attend a class in citizenship. Those who expressed a wish to become citizens were aided in every possible way, while those who neglected to fulfill their duty were followed up through the foremen of their departments. All alien employes finally were enlisted in the naturalization campaign.

Instructions have been given to superintendents and division heads of the Republic Iron & Steel Co., Youngstown,, O., to aid every employe wishing to become a citizen, by urging him to attend evening school and otherwise to assist him in procuring his naturalization papers. The Greenfield Tap & Die Corp., Greenfield, Mass., is conducting a campaign with the object of encouraging its alien employes to apply for citizenship. Plans to establish a school to prepare applicants for final papers now are being made. While the Youngstown Sheet & Tube Co., Youngstown, O., has been actively engaged in Americanization activities, it also has done a great deal in the way of welfare work in providing adequate housing facilities for its workmen. A housing expert lately has been employed to supervise the improvement of a tract of land for use as sites for workmen's dwellings.

Employes Are Rewarded

The will of John Bartlett Pierce, who died lately at Peabody, Mass., divides $1,000,000 among 400 of his old employes and further distributes among them 60 per cent of the income of $2,500,000. This principal also ultimately is to be distributed among them with certain limitations. By this will it is estimated that seven-tenths of Mr. Pierce's fortune is given to the men who helped him make it. Mr. Pierce was a founder of the radiator business in the United States and at the time of his death was vice president of the American Radiator Co. The will also provides a sum to be expended for technical research in heating, ventilating and sanitation "to the end that the general hygiene and comforts of human beings and their habitations may be advanced."

Labor Disturbances Show Decreasing Trend

Scattered instances of labor unrest in the iron and steel industry still are seen. However, the diminution in the number of strikes gives an indication of the number of cases in which manufacturers have forestalled the effect of these critical times, by providing extra compensation in the way of a bonus, or by increasing the rate of wages of the employe. Disputes of the past week that have been noted are the following: A strike at the plant of the National Conduit Co., Hastings, N. Y., of 2500 employes, owing to the refusal of a demand for shorter hours and an increase in wages; strike of machinists, pattern makers and iron workers at the plant of the Samuel Moore & Sons Corp., Elizabeth, N. J., owing to the refusal of a demand of $4.50 a day; a strike of molders and coremakers at the plant of Barry & Zechers, Lancaster, Pa., upon the refusal of an increase to all employes; strike of 1000 drop forgemen at various plants in Cleveland, for an 8-hour day, double time for overtime and union recognition; a strike of machinists involving seven of the principal shipyards in the locality of New York for a minimum wage of $4.50 a day; strike at the International Nickel Works, Bayonne, N. J., called off recently, and a threatened strike at the American & British Mfg. Co., Bridgeport, Conn., averted through the efforts of federal conciliators.

A unique system of co-operative farming has been evolved by the Union Steel Products Co., Albion, Mich. The company has rented 40 acres of land and furnishes team labor and seeds. A commission of five members is to have charge of the details of the work. For each hour of work on the land, each employe is to receive 25 cents an hour, or an equivalent amount in vegetables, while at the end of the season, the proceeds are to be divided.

Much Toluol

Wanted by Various Governments but Supply is Big Problem

New York, July 16.—Makers of toluol have been deluged this week with inquiries for large quantities of this product for the manufacture of trinitrotoluol. Some of this demand is from foreign countries, through representatives in this country, but most of it is in connection with the requirements of the United States government. Where all this toluol is to come from is a puzzle which will be worked out with difficulty as the output far into the future already has been committed in connection with high explosive requirements of the United States, of France and of others of the allies. Although no toluol business of importance has been placed during the week, considerable more benzol and phenol have been closed for shipment abroad. Prices show no change. Pure benzol continues to be quoted at $0.55 to $0.60 per gallon, at producers' plant, both for spot and contract; toluol at $1.75 to $2 per gallon, at producers' plant, for spot, and $1.50 to $1.75 for contract, and phenol at $0.38 to $0.40 per pound at producers' plant, for spot and contract.

Solvent naphtha continues uneventful; although a fair volume of business is being booked, supplies are plentiful and prices show no tendency to advance. It still is quoted at 18 to 25 cents per gallon, at producers' plant, for spot and at 18 to 22 cents for contract. Sulphate of ammonia has not been prominent in the week's business. This product is well sold up and prices are exceedingly strong at $4.85 to $5 per 100 pounds, at seaboard, for spot and $4.40 to $4.50 for contract shipment.

Coke Oven By-Products

Spot.

Per Gallon at Producers Plant.

Pure benzol	$0.55 to .60
Toluol	1.75 to 2.00
Solvent naphtha	.18 to .25

Per Pound at Producers Plant.

Phenol	$0.38 to .40

Per 100 Pounds at Seaboard.

Sulphate of ammonia	$4.85 to 5.00

Contract.

Per Gallon at Producers Plant.

Pure benzol	$0.55 to .60
Toluol	1.50 to 1.75
Solvent naphtha	.18 to .22

Per Pound at Producers Plant.

Phenol (nominal)	$0.38 to .40

Per 100 Pounds at Seaboard.

Sulphate of ammonia	$4.40 to 4.50

Copper Statistics

Survey Issues Advanced Statement on Production in 1916

A gain of 39 per cent was made in the smelter production of primary copper in the United States in 1916, according to an advance statement just issued by the geological survey. The total aggregated 1,927,850,548 pounds and was valued at $474,288,000, a figure almost twice as large as that of the preceding year. The valuation was based on an average price of 24.6 cents a pound. In the production of primary copper, Arizona came first with 694,847,307 pounds, and Montana second with 352,139,768 pounds.

The total production of new refined copper in 1916 was 2,259,387,315 pounds, an increase of about 625,000,000 pounds from the output of 1915. If the output of plants treating purely secondary material is added to the production of the regular refining companies, the contribution from plants in the United States to the world's supply in 1916 is found to be 2,922,000,000 pounds.

Stocks on hand at the beginning of the year amounted to 128,055,229 pounds, as compared with 82,429,666 pounds on Jan. 1, 1916.

The apparent consumption of refined new copper in the United States in 1916 was 1,429,755,266 pounds. In 1915, it was 1,043,982 pounds. If to the 1,429,755,266 pounds of new refined copper is added the 594,423,807 pounds of secondary copper and copper in alloys produced during the year, it is found that a total of about 2,024,000,000 pounds of new and old copper was available for domestic consumption.

To Make Firebrick

Organized with a capitalization of $20,000 to take over the plant of the Tri-State Development Co., Ironton, O., the Iron Firebrick Co. of that city soon will commence regular production, although the Tri-State plant has been idle for several years. The new company will produce 15,000 fire brick and 30 tons of fire clay daily. Following are the officers: H. A. Marting, president; A. C. Steece, vice president, and C. C. Hayward, secretary, treasurer and general manager.

Sell Kewanee Tube Mill

Arrangements have been completed by the United States Steel Corp. with Hayden, Stone & Co., New York, for the sale of the Kewanee, Ill., plant of the National Tube Co. The Hayden firm purchased the plant for the Walworth Mfg. Co. The Kewanee plant, formerly known as the Western Tube Co., was built in 1883 and operated for the first time in November of that year. Equipment included four trains of rolls, 20 furnaces and one hammer. The plant had an annual capacity of about 75,000 tons of skelp, 25,000 tons of wrought iron and 60,000 tons of steel pipe. In 1908 the rolling mills were dismantled and in 1915 the tube mills also were removed. The plant foundry with a normal capacity of 28,400 tons of gray iron and malleable and 2600 tons of brass castings, has been producing pipe fittings.

Official Changes Made

Changes brought about in the management of the Connersville Blower Co., Connersville, Ind., owing to the recent death of E. W. Ansted, president of the company, consist in the naming of J. T. Wilkin as president, and R. T. Huston as vice president. Mr. Wilkin, formerly vice president of the company, is an engineer of long experience. The board of directors now consists of the following: J. T. Wilkin, J. E. Huston, R. T. Huston, C. D. Beck, G. W. Ansted, J. S. Tatman and F. B. Ansted. The Connersville Blower Co. was established in 1893 and owns and operates a plant at Connersville, Ind. Branch offices are maintained at 114 Liberty street, New York, and 929 Monadnock building, Chicago. The company manufactures gas pumps and exhausters, also rotary pressure blowers and cycloidal pumps.

Will Improve Old Stack

About $100,000 will be spent within the next 60 days on the old blast furnace plant of the Oregon Iron & Steel Co., Oswego, Oreg., now the property of the Pacific Coast Steel Co., according to a statement made by William Pigott, one of the executive officials of the latter company. The Oswego plant cost originally $300,000 and was built in 1894. Although the plant has not been operated for several years, it is said to be in good condition. Ore brought from the west coast of South America will be used.

Plan Mill in South

The Dixie Steel Corp., New Orleans, recently has been chartered in Delaware with $500,000 capital to build a rolling mill for the utilization of scrap iron. B. W. Seidel, president of the Seidel-Crosz Mfg. Co., of New Orleans, maker of wagons and wheels, has been named president of the new corporation. Plans have been made to commence construction work within 90 days on the plant. The plant is to have a daily capacity of about 200 tons of bar steel and smelter products inclusive of nuts, bolts, etc.

To Rehabilitate Plant

New York, July 17.—Arrangements have been completed for the refinancing of the Sheffield Coal & Iron Co. and the company's properties are to be put in operation at the earliest date possible which it is expected will be late this year. The plan of financing provides ample funds to build at Sheffield a by-proluct coke-oven plant, and the furnace and mines will be equipped with modern facilities for economical production so as to insure continuous operation. Due to the high cost of construction and the difficulties in securing delivery of building materials, the construction of the by-product ovens will be deferred for the present although the money for the construction has been provided. In the meantime, coke will be made at the company's beehive ovens at Jasper, Ala. The general manager of the company will be Warren L. Kluttz.

Completes Large Foundry

The Brady Foundry Co. has completed three buildings of its new plant which is one of the largest foundries in Chicago, producing general heavy grey iron castings. The new buildings are 140 x 300, 90 x 220 and 90 x 200 feet respectively. Although some heats are being made at the present time in the new foundry, it will not be operated to capacity until the middle of August.

Engineers Elect

At the adjourned meeting of the annual convention of the American Association of Engineers, July 13, the following officers were unanimously elected:

President, Edmund T. Perkins, consulting engineer, and president of the Edmund T. Perkins Engineering Co., Chicago.

First vice president, W. H. Finley, chief engineer, Chicago & North-Western railroad.

Second vice president, Isham Randolph, consulting engineer, and president of Isham Randolph & Co., Chicago.

A resolution was adopted forming a patriotic league of engineers which provides for a census of engineers and the care of dependents of enlisted men. Co-operation with other engineering societies is to be fostered.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WARREN LAWSON KLUTTZ, who has had an extensive experience in the operation of blast furnaces in the south, has been appointed general manager of the Sheffield Coal & Iron Co., Sheffield, Ala. Mr. Kluttz was born in Salisbury, N. C., in 1879 and graduated from the University of North Carolina in 1899. Since then he has devoted practically all of his time to the blast furnace industry. From 1903 to 1905 he served as chemist at Bessemer and Ensley, Ala., for the Tennessee Coal, Iron & Railroad Co. From 1905 to 1906 he served as assistant superintendent of the Tennessee company's Ensley plant and in 1906 and 1907, respectively, he acted as superintendent of the Alice furnace at Birmingham and the Ensley furnaces. In 1907 he became assistant general superintendent of the Republic Iron & Steel Co.'s furnaces at Thomas, Ala., being promoted to the general superintendency in 1910. He served in this capacity until 1913 when he became vice president and general manager of the Central Iron & Coal Co., Holt, Ala. Mr. Kluttz is a member of the American Institute of Mining Engineers, the Southern club at Birmingham and other organizations.

Robert Wetherill has been elected president of the American Pipe & Construction Co.

Frank F. Thompson, for many years with the Gulf States Steel Co., at both the Ensley and Gadsden, Ala., plants, has been made assistant manager of works.

J. H. McKelvey has been made sales manager of the Laclede-Christy Clay Products Co., St. Louis, succeeding H. K. Lackland, who resigned.

Victor F. Morgan has recently been appointed assistant superintendent of the gun department of the Winchester Repeating Arms Co., New Haven, Conn.

John K. Miller Jr. has resigned his connection with the Vesta furnace of E. J. Lavino & Co., Marietta, Pa., to enlist in the United States signal corps.

Simeon Dupre, a former Worcester, Mass., die-sinker, has been appointed general superintendent of the Lenthier Machine Works, Maisonneuve, Montreal.

Henry C. Graton, treasurer of the Graton & Knight Mfg. Co., Worcester, Mass., celebrated his eighty-seventh birthday anniversary July 10 and spent it at his desk.

Russell Wykoff, who has been connected with the Detroit office of the United Alloy Steel Corp., Canton, O., has succeeded Barton L. Little as district sales agent, with offices at Chicago.

C. W. Owen, for many years general sales agent of the Virginia Iron,

WARREN L. KLUTTZ,
Appointed General Manager of the Sheffield Coal & Iron Co.

Coal & Coke Co., Roanoke, Va., has resigned in order to make other business connections. Mr. Owens' successor has not been named.

Abram F. Huston, president of the Lukens Steel Co., Coatesville, Pa., has been elected vice president and director of the National Bank of Chester Valley, Coatesville, to succeed William H. Gibbons, resigned.

Frank S. Ray, who for a number of years represented the Bridgeport Crucible Co., Bridgeport, Conn., throughout the east, has taken a similar position with the Naugatuck Valley Crucible Co., Shelton, Conn., recently organized.

William L. Pieplow, manager of the Arcadian Malleable Range Co., Milwaukee, has been elected president of the Milwaukee board of school directors. Mr. Pieplow served as president in 1908 and 1909 and has been a member of the board more than fifteen years.

W. L. O'Connell has resigned as assistant sales manager of the De Forest Sheet & Tin Plate Co., Niles, O., to join the firm of Watson Bros., New Castle, Pa., dealers in iron and steel sheets, and has assumed his new position.

William P. Palmer, president of the American Steel & Wire Co., has gone to Blue Hill, Me., for the summer. While away Mr. Palmer will make his headquarters at the north works of the company in Worcester, Mass., going to Maine for the week-ends.

Prof. George I. Alden, president of the Norton Co., and the Norton Grinding Co., Worcester, Mass., has presented the town of Oakham, Mass., $5000, to be known as the Mary Lincoln Alden fund and to be used for the care and relief of needy sick persons.

W. A. Bliss, formerly with the Dravo Contracting Co., Aliquippa, Pa., and later with the Keystone Sand & Supply Co. of the same city in the capacity of secretary, treasurer and general manager, has been named treasurer of the Kidd Drawn Steel Co., Aliquippa, maker of special steels.

Reuben T. Robinson, formerly of the Berlin Bridge Co., East Berlin, Conn., has been appointed resident engineer for the Michigan Central railroad and will superintend the construction of a 57-foot steel three-track arch bridge across the Niagara Falls gorge.

H. T. Hornsby has resigned as vice president and general manager of the United Iron Works, Springfield, Mo., and has severed his connections with the company. D. C. Morrow, formerly of Iola, Kans., has been elected as vice president and assistant general manager. These changes became effective July 1.

Earle Buckingham, formerly assistant equipment engineer in the gun department of the Winchester Repeating Arms Co., New Haven, Conn., has been selected to organize and train a corps in gage inspection in Washington, with the rank of captain. The corps will be established

by the government and will be responsible for the accuracy of the gages used to inspect the heavy ordnance employed in the war. Mr. Buckingham has performed important service of the same kind on the large shrapnel contract handled for the Russian government by the Canadian Car & Foundry Co.

Walter M. Denman, Springfield, Mass., consulting engineer, has received a commission as a major in the engineers' division of the officers reserve corps of the United States army. He is the second civilian in New England to receive so high a commission in this branch of the engineers corps.

Frank R. Bacon, president of the Cutler-Hammer Mfg. Co., Milwaukee, has been appointed a captain in the federal commissary department, and left July 10 for Philadelphia to report. Capt. Bacon made application for the commission last winter. Several days ago he was recommended by the governor of Wisconsin as food controller of Wisconsin under the act now before congress.

R. M. Klein has been appointed sales manager of the International Oxygen Co., 115 Broadway, New York. Mr. Klein has had comprehensive experience as an engineer in the employ of the United States government, and has also served as salesman and sales manager for the Diehl Mfg. Co. He entered on his new duties July 1.

Frank A. Ray, professor of mining engineering at Ohio State University, has returned from a seven months' mission to Russia, spent in the interests of American steel manufacturers. Professor Ray conducted an investigation of the coal deposits of Russia and reports a large supply of good coal available for manufacturing purposes.

Col. Truman H. Newberry, Detroit, who was secretary of the navy under President Roosevelt and at one time president and treasurer of the Detroit Steel & Spring Co., and of the Detroit Steel Casting Co., has become senior aide to Capt. William R. Rush, commandant of the Charlestown, Mass., navy yard. He has the rank of lieutenant commander in the naval reserve force.

P. D. L. Perry, European manager of the Ford Motor Co., has arrived in this country. Mr. Perry, assisted by Henry Sorensen, manager of the Ford plant at Dearborn, Mich., some time ago began the construction of a Ford plant at Cork, Ireland, which is to have capacity for producing 50,000 farming tractors a year. It is expected the Cork plant will be operating next spring.

Charles A. Paguet has resigned the presidency of the General Car & Machinery Works, of Montmagny, Que., to take the general management of the plant, succeeding W. E. Patterson, who resigns on account of ill health. D. O. Lesperance, who succeeds to the presidency of the company, is chairman of the Quebec harbor commission and president of the A. Belanger Co., Ltd., of Montreal, agricultural implement and stove manufacturer.

Edgar C. Felton, formerly president of the Pennsylvania Steel Co., has accepted an appointment as director of the department of civilian service and labor under the committee of public safety, Philadelphia. In addition to being connected with various railroads and steel companies, Mr. Felton now is on the board of managers of the Girard Trust Co., director of the Franklin National bank and the Farmers and Mechanics National bank.

F. H. Tackaberry, general agent for the American Steel Export Co., sailed from New York a short time ago on the steamer VESTRIS for South America. He will cover a large portion of the Latin-American countries and will visit Rio Janeiro, Sao Paulo, Buenos Aires, Montevideo, La Plata, Rosario, Valparaiso and Santiago. Mr. Tackaberry will consult with the various agents of the company in South America toward extending and improving general trade relations and will devote considerable time to the study of market conditions.

Francis C. Shenehon, for the past eight years head of the college of engineering of the University of Minnesota, has resigned and is now giving his exclusive attention to his practice as consulting engineer. Dean Shenehon has enjoyed an extensive consulting practice for a number of years. Some of his work is of particular interest to the iron and steel industry. He served as engineering expert for the United States from 1910 to 1915 in the Chicago sanitary canal litigation. This case has not yet been closed and undoubtedly Dean Shenehon will be called upon for further advice. The maintenance of water levels on the Great Lakes is of vital importance to the iron and steel industry on account of its direct connection with the iron ore traffic. Mr. Shenehon's offices are in the New Metropolitan Bank building, Minneapolis.

Remodeling of the Vesta furnace at Marietta, Pa., rapidly is nearing completion and it is expected this stack will go into blast Aug. 1. Ferromanganese is to be the product.

War Products

Will Be Supplied by New Fairfield Mills—Plate Capacity Planned

Definite plans now have been evolved for the new group of finishing mills which the Tennessee Coal, Iron & Railroad Co. will erect at Fairfield, Ala., in accordance with a general announcement previously made. According to an official statement by President George G. Crawford of the Tennessee company, the new finishing mill will consist of an electrically driven 110-inch plate mill, and an electrically driven combination mill designed to roll shapes, bars and light rails. A reversing blooming mill, electrically driven, also will be built to roll slabs and blooms for the finishing mills. The products of the shape and plate mills will be delivered by electrically operated telphers to large fabricating shops. The character of the new mills has been determined by those products which are particularly in demand in connection with the conduct of the war. It has been reported in the south that the new rolling capacity will be utilized as a base of supply for a large shipbuilding plant to be erected at Mobile or some other gulf point primarily to serve the government in its large vessel construction program.

The location of the new finishing plant at Fairfield is in Possum county, southwest of the by-product ovens of the company and about 10 miles from Birmingham. At the present time the Fairfield works of the Steel Corporation consist of a by-product plant and a wire plant of the American Steel & Wire Co. The housing of the employes of the new mills will be provided for partially by the company through the construction of dwellings for about 600 families. An appropriation of $11,000,000 has been provided for the new mills and auxiliary construction.

Charter Tool Company

The Standard Bridge Tool Co., Fulton building, Pittsburgh, builder of the Thomas spacing table, has been incorporated in Pennsylvania, and the name of the company has been changed to the Thomas Spacing Machine Co. The Thomas company is capitalized at $320,000. Directors are: George P. Thomas, Howard Zacharias, J. S. M. Phillips, Julian Burdick and C. H. Stoer. The company owns a site of 19 acres at Glenshaw, Pa., near Pittsburgh, on the main line of the Baltimore & Ohio railroad. The company is erecting a machine shop, equipment for which has been purchased. Offices of the company are in the Fulton building.

Export Ban Cutting Enemy Supplies

President's Proclamation Against Outgoing Shipments of Military Needs Without License Now in Effect—Machinery of Issuing Permits Running Smoothly—Canadian Consignments Will Go Forward as in the Past

WASHINGTON, July 17. — Since becoming effective July 14, President Wilson's export control proclamation has stimulated the already large number of applications for licenses to ship abroad which had been coming to the division of license of the exports council, department of commerce. Many of these licenses, it is understood, have related to shipments of munitions to the allies. Details as to these licenses will not be given out.

Ships which have not received clearance papers from an American port prior to the effective date of the proclamation will be held up until export licenses are obtained. The division of licenses has ruled that applications for licenses must be made by the American principal participating in the foreign transaction. The bona fide exporter must apply for the permit to ship. Applications may not be made by forwarding agents, or shipping companies. Every effort is being made to facilitate shipments of supplies to the allies. Representatives of M. Tardieu, the French purchasing commissioner, and of Conop Guthrie, British purchasing agent, have urged the necessity of expediting cargoes for their countries. A large number of applications for licenses have been filed by the French and British agents.

Stanley H. Rose of the export department of the Barber Asphalt Co., Philadelphia, has resigned to take charge of the New York branch office of the bureau of foreign and domestic commerce. This office will be of special importance in the department's work of licensing exports, as most of the application from the New York district will be received at the local office. Certain classes of licenses will be issued there without consulting Washington. Paul Fuller, prominent New York lawyer and member of the Coudert firm, which represented the allies before America entered the war, has been made chief of the war intelligence section of the export licensing bureau. His organization will check up on the doubtful firms in neutral countries that wish to draw supplies from the United States.

Pursuant to the embargo proclamation of the President, the commission on car service of the American Railway Association July 13 telegraphed notice to all of the railroads of the country July 13 barring the export, named in the President's proclamation, except under federal license. These related to shipments of coal, coke, fuel oils, kerosene, gasoline, pig iron, steel billets, ship plates, structural shapes, scrap iron, and steel, ferromanganese, arms, ammunition, explosives, along with grain, etc., consigned, reconsigned, to be reconsigned, or intended for export, except when the bill of lading was presented with the federal license furnished or authorized by the export council, together with the permit number authorized by the port delivery road. Arrangements have been made under which all shipments consigned to points in Canada can go forward as heretofore. Special licenses covering them are being issued through the customs service. It has been suggested that the port lines protect against accumulations at ports by placing such embargo as is necessary against cars in transit. All ports lines have been requested to immediately inaugurate a permit system covering all export traffic.

Application Form A

APPLICATION FOR ORDINARY EXPORT LICENSE

This form should be made out in triplicate, and the answers to the following questions must be written legibly, or typewritten if possible. When filled out and signed, send the three copies to the BUREAU OF FOREIGN AND DOMESTIC COMMERCE, DIVISION OF EXPORT LICENSE, 1435 K. Street, N.W., Washington, D. C., or to the nearest branch office of the Bureau (New York, Boston, Chicago, St. Louis, New Orleans, San Francisco, Seattle).

Applicant's reference No..... Date.....

BUREAU OF FOREIGN AND DOMESTIC COMMERCE,
DIVISION OF EXPORT LICENSES

I / We hereby apply for a license to export..... (Quantity)

of..... (Goods)

to..... (Consignee) (Address)

..... (Signature of Applicant)

License to be sent to..... (Name)

..... (Address)

THIS LICENSE IS VOID AFTER SIXTY DAYS FROM DATE

This stub will be filled in, detached, and sent promptly by the Deputy Collector of Customs at the port of shipment to the BUREAU OF FOREIGN AND DOMESTIC COMMERCE, DIVISION OF EXPORT LICENSES, 1435 K. Street, N.W., Washington, D. C.

Port.....

Date..... 191....

TO BUREAU OF FOREIGN AND DOMESTIC COMMERCE,
DIVISION OF EXPORT LICENSES,
WASHINGTON, D. C.

This is to certify that..... (Consignor) has shipped

against Export License dated..... a total of..... (Quantity)

of..... (Goods)

on the S. S..... on bill of lading dated

..... 191.... from this port.

Signed..... Deputy Collector of Customs

FAC SIMILE OF APPLICATION BLANK FOR EXPORT LICENSE

License Plan is Moving Smoothly at New York

New York, July 17.—Exporters in this city are finding it a simple matter to make application for licenses for exporting commodities which come within the scope of President Wilson's export embargo. All that is necessary is to secure blanks such as shown in the accompanying illustration, fill them out in quadruplicate

and file them with the nearest office of the division of export licenses, bureau of foreign and domestic commerce, which in New York is located in Room 409, Custom House building. In some cases the applications are approved without delay by the local agents, while in others they are forwarded to Washington for consideration by the bureau authorities. Experience already has shown that where the attention of Washington is required a delay of at least several days can be expected.

The bureau carefully is guarding against the spread of any information which would give a line on the general policy being followed in the granting of applications covering different commodities. In fact, the only information obtainable from the authorities is comprised in instruction as to how to fill out the blanks. Numerous applications for licenses to cover export shipments of iron and steel already have been made, but as far as known none of them yet has been approved. On the other hand, numerous licenses already have been granted to ship various kinds of foodstuffs.

In filling out the blanks, it is necessary to set forth in full the name and address of the applicant and the ultimate consignee, and the name of the railroad, forwarding agent, steamship company or other agent who is to handle the shipment. A complete list of the goods to be sent, including specifications as to dimensions, quantities, etc., must be enumerated either in the application or must be attached thereto. Following approval two copies of the application are retained by the bureau, and two are sent to the railroad or steamship company indicated; on making shipment one of the latter copies is filed in the custom house with the manifest and the other accompanies the shipment on board the vessel. Inasmuch as the railroads now will accept no export shipments until the licenses have been granted, exporters are losing no time in filing their applications.

Milwaukee Manufacturers Sponsor Gun Plant

Milwaukee, Wis., July 16.—An ordnance factory devoted exclusively to the manufacture of 3-inch guns, 1916 model, for the United States government, will be established in Milwaukee by five of the largest machinery and foundry concerns of the city at the request of the war department. The Wisconsin Gun Co. has been incorporated with $100,000 capital stock to inaugurate the enterprise and keep it in operation until congress enacts enabling legislation for the purchase of the plant by the government. The following manufacturers are interested in the project: Bucyrus Co., South Milwaukee, steam shovels and excavating machinery; Kearney & Trecker Co., Milwaukee, milling machines; Northwestern Malleable Iron Co., Milwaukee, malleable castings; Cutler-Hammer Mfg. Co., Milwaukee, electric controlling devices, and Power & Mining Machinery Co., Cudahy, subsidiary of the Worthington Pump & Machinery Corp. The shop will do the finishing and assembling of the guns ready for the carriages. The government will furnish rough-finished forgings and castings.

By courtesy of the Cutler-Hammer company, its superintendent, Henry J. Wiegand, has been appointed general manager of the new gun works. Mr. Wiegand has taken charge of the erection, equipment and management of the project on leave of absence. Officers of the new concern are: President, W. W. Coleman, Bucyrus Co.; vice president, E. J. Kearney, Kearney & Trecker Co.; vice president, John D. Bird, Power & Mining Machinery Co.; treasurer, Frank R. Bacon, Cutler-Hammer Mfg. Co.; secretary, Frederick L. Sivyer, Northwestern Malleable Iron Co. It is announced that the project has been undertaken purely from a sense of duty and public spirit.

Export Company Expands

The International Trading Corp., organized about a year ago as a small company, recently has been strengthened by additional capital and now is preparing to participate in export trade on a large scale. The company, organized under the laws of the state of Washington, with $5,000,000 authorized capital, maintains its head office at Seattle and its executive offices in New York. It has foreign offices in England, France, Russia, Spain, Portugal, Italy, South Africa, Australia, South America, China, Japan and Cuba. The International corporation will concentrate its efforts on establishing firm trade relations with all the chief distributing points in South America. Its officers are well known in the exporting and importing field. They are: President, William M. McElroy, president of the St. George Lumber Co., Vancouver; first vice president, James F. Purdy, Hanover Steel & Iron Co., Newport News, Va.; second vice president, H. Benjamin L'Hommedieu, Seattle, expert commercial economist, who has devoted years to the study of trade conditions all over the world and particularly in South America and the orient; secretary and treasurer, Theodore A. Frey, vice president of the British-American Co., Chicago. The New York office, which is located at 74 Broadway, is in charge of Mr. L'Hommedieu, who has organized the company's departments of production, transportation and distribution.

Shipyards Are Combined

A consolidation of the Kraft Shipyard & Drydock Co., Ninety-fourth street and Calumet river, South Chicago, with the following companies, is announced: The A. F. Mitchell & Son, electric boiler welding; the G. Brading Boiler Repair Shop; the A. E. Clark Electric Repair Shop, and the E. G. Todt Marine Engine Repair Shop. With these enlarged facilities the Kraft shipyard will be able to do any kind of above-water repair work on lake vessels.

Danbury Hat Judgment is Finally Settled

Lawyers and union officers representing the litigants, in the case of D. E. Loewe & Co., Danbury, Conn., against the United Hatters of North America, have reached an agreement for a settlement of the judgment of $252,000. According to the agreement, it is said, a check for $165,000, making a total of $235,000, was tendered as a final payment; savings bank deposits of $70,000 previously having been attached and collected by the Loewe company. Formal steps to have the attachments vacated have been taken. A boycott of the product of the Loewe factory, after the firm refused to make the shop a closed one, was the cause of the trouble. In 1902, organized labor attempted to unionize all factories in Danbury and the resulting boycott was the cause of litigation, continuous until recently. Final judgment was secured by the firm several years ago and steps taken to recover damages through the courts.

Will Sell Furnace

The Sam Lanhan furnace, at the Rusk, Tex., penitentiary, is up for sale by the governor and state prison commisioners. This blast furnace has not been in operation since 1907, with the exception of about 40 days in 1908. The furnace was relined and placed in first class condition in 1908, and has never been operated since the relining was completed. The state of Texas also has for sale a pipe foundry at Rusk, which is in a dilapidated condition.

Iron and Steel Financial News

Up-to-the-Minute Fact and Comment Collected and Sifted For Busy Readers

Industry Protests Senate Excess Tax Bill

WASHINGTON, July 17.—Two provisions of the war revenue bill are particularly obnoxious to the manufacturers of the country and protests now are pouring into the capital center about these two clauses —the tax on excess profits and that on undivided surplus. The theory underlying the excess profits tax is held to be faulty, while the levy on undivided surplus is said to limit arbitrarily the expansion of manufacturing plants at the very time that the government's war needs demand that manufacturing capacity be hugely increased.

Stipulations of the Senate Bill

The revenue bill now is being held up by the senate committee on finance awaiting action upon other war measures now before the senate. The bill has passed the house, but has practically been redrawn by the senate committee. The senate plan imposes taxes which aggregate 200 to 300 per cent and more above the abnormally high levies imposed by the ways and means committee of the house. The latter placed a direct 4 per cent tax on the net profits of corporations together with an excess profits tax of 16 per cent on all profits for the year 1917 over and above an arbitrary exemption of 8 per cent on capital and surplus, earned or paid in; and, less a further arbitrary exemption of $5000. The senate committee retained the 4 per cent direct tax on net profits; repealed the 8 per cent net tax on excess profits as well as the 12 per cent tax on munitions exports and substituted a sliding scale basis of taxation on current profits over normal prewar profits together with a further tax of 15 per cent on undivided surplus earned during the year 1917 in excess of 20 per cent. The $5000 exemption also is allowed in the senate bill.

The percentage of profits assumed in the senate figures is not based upon either capital, investment, or volume of business, but upon the average profits made in the years 1911, 1912 and 1913.

The protests now reaching congress indicate that the manufacturers are willing to pay a large war tax provided the basis of taxation is fair. A tax levied upon present earnings and based upon the present actual capital invested would undoubtedly satisfy many manufacturers who are now strenuously opposed to the senate bill. They consider the senate theory of taxation unjust because the alleged normal earnings are considered both for purposes of exemption and calculation when the so-called normal should be considered only as a basis of exemption.

The additional levy of 15 per cent on undivided surplus earned in 1917 in excess of 20 per cent, these protests emphasize, is equally unjust. Surplus in the case of many manufactories, it is pointed out, is entirely a bookkeeping term instead of representing actual cash, as the senate committee seems to think. For instance, a new building constructed out of surplus might still be carried on a corporation's books as surplus. To pay the new tax, the company might even be forced to borrow money on this building or so-called surplus.

Some of the senators undoubtedly used the current English system as a basis for the war revenue bill in its present form. In England, however, the protestants show the excess profits taxes were not levied until the bulk of the manufacturing plants were under direct governmental control or supervision. Emphasis is laid on the fact that the manufacturers of this country now face the problem of supplying the normal needs of 100,000,000 people together with the abnormal requirements of the government. Under such taxation as the senate committee would impose, the problem of meeting these joint needs would be seriously complicated, it is said. Manufacturers state they will hesitate to employ more than the 20 per cent exemption allowed on their surplus, in expanding their plants while the graduated scale of excess profits tax would sharply curtail the funds available for the expansion which now is so imperatively needed.

A comparison of taxation under the proposed house and senate bills is worked out herewith in the typical case of a steel company with a capital and surplus of $500,000, which will earn $225,000 during 1917 and had average earnings of $30,000, net, for 1911, 1912 and 1913:

UNDER HOUSE BILL

(a)	4 per cent direct tax on $225,000.	$ 9,000
(b)	16 per cent on $180,000, or $225,000 less exemption of $40,000 (8 per cent) and $5000.....	28,800
	Total taxes proposed in house bill	$ 37,800

UNDER SENATE BILL

(a) 4 per cent direct tax on $225,000. $ 9,000

(b) Excess profits as follows, after exemption of $30,000, or 6 per cent on capital:

Over	Not Exceeding	Excess Per Cent	Amount	Tax Per Cent	Amount
$ 30,000	$ 34,500	15	$ 4,500	12	$ 540
34,500	37,500	25	3,000	16	480
37,500	45,000	50	7,500	20	1,500
45,000	52,500	75	7,500	25	1,875
52,500	60,000	100	7,500	30	2,250
60,000	75,000	150	15,000	35	5,250
75,000	90,000	200	15,000	40	6,000
90,000	105,000	250	15,000	45	6,750
105,000	120,000 at 50 per cent				60,000

Total excess profits..... $ 84,645

(c) 15 per cent on undivided surplus earned in 1917 of $140,000 ($225,000, less $50,000 dividends declared, less 20 per cent of the surplus remaining) 21,000

Total taxes proposed in senate bill.. $114,645

Lackawanna Steel Reports Big Quarterly Net

Further demonstration of the remarkable reversal of earnings in the steel industry in a period of two years is shown in the second 1917 quarterly report of the Lackawanna Steel Co. The earnings, after all charges, for the June quarter more than doubled those of June a year ago, and were more than 25 times as large as those in the second three months' period of 1915. The profit, $6,907,630, makes the company's total earnings for the half year $12,198,215, or at the annual rate of approximately

$70 on each of the outstanding common shares of $35,096,500. It also makes the 10-year earnings average $6.11 per share. This remarkable showing by the Lackawanna company is due to the company's policy in harmonizing plant facilities, decreasing interest charges, diversifying products and generally adding to the company's earning power. Unfilled orders June 30, 1917, were 913,196 tons compared with 992,096 tons March 31, 1917, and 932,857 tons June 30, 1916.

The comparative earnings of the company for the half years and second quarters of 1917 and 1916, follow:

	First half of 1917	1916
*Total net earnings	$14,082,644	$7,298,626
Deduct:		
Bond int., Lack	622,585	771,333
Bond int., subs	100,029	152,491
Rentals and royals	8,542	50.818
Balance	$13,351,487	$6,323,983
Exting. mines, etc.	207,387	154,389
Depreciation	945,884	851,251
Profit for 1st half	$12,198,215	$5,318,342
	Second quarter of 1917	1916
*Total net earnings	$7,879,412	$4,051,033
Deduct:		
Bond int., Lack	311,291	368,833
Bond int., subs	45,945	75,829
Rentals and royals	.....	25,359
Balance	$7,522,174	$3,581,011
Exting. mines, etc.	105,702	82,597
Depreciation	508,841	431,140
Profit for 2d quarter	$6,907,630	$3,067,273

*After deducting all expenses, including ordinary repairs and maintenance, but not renewal expenditures.

Bath Iron Works is Taken Over by Syndicate

The Bath Iron Works, Ltd., Bath, Me., incorporated in 1884, with $200,000 capital and widely known as the builder of steel ships, has been sold by the estate of John S. Hyde, its president until his death last March, to a syndicate of Maine financiers. Former Governor William T. Cobb, Rockland, Me., chairman of the Maine shipbuilding committee has been elected a director and president of the corporation. The other new directors are Frederick H. Appleton and Henry W. Cushman, both of Bangor, Me.; Maynard S. Bird, Hugh J. Chisholm, Eleazer W. Clark, Charles H. Gilman and H. M. Verrill, all of Portland, Me.; Weston Lewis, Gardiner, Me., and H. H. McCarty, manager of the business, John McInnes and Charles P. Wetherbee, all of Bath, Me. The corporation has contracts for nine torpedo boat destroyers, to cost more than $10,000,000. It plans to double the capacity of the plant for the production of the vessels required by the government naval department's new plans.

Foreign Steel Holdings Continue to Fall

Foreign holdings of the stock, both common and preferred, of the United States Steel Corp. decreased 26,698 shares on June 30 compared with March 31. The shares of both classes held abroad June 30 numbered 619,397 while on March 31 it was 646,095. The decrease in Steel common last quarter was 17,227 shares, while in the first quarter it was only 8249. Preferred last quarter dropped 9471 shares. Domestic holdings June 30 aggregated 8,066,439 shares, as against 8,039,741 on March 31. The total common and preferred, domestic and foreign, in each quarter was 8,685,836 shares.

The foreign holdings in the last quarter were as follows:

County	March 31	June 30	Decrease
Holland	257,033	254,469	2,564
Germany	1,663	1,663	.....
Austria-Hungary	4,165,	4,165	.....
Canada	69,739	70,955	*1,216
England	234,613	215,911	18,702
France	56,747	56,309	438
All other countries	22,135	15,925	6,210
Total	646,095	619,397	26,698

*Increase.

Arrange Western Merger

A merger has been effected by the Seattle Car & Foundry Co. of Seattle and Renton, Wash., with the Twohy Bros. Co., Portland, Oreg., and Spokane, railroad contractors, through the efforts of William Pigott, president of the first named company. Capital of about $1,000,000 is said to have been involved in the deal. Mr. Pigott also is vice president of the Pacific Coast Steel Co., San Francisco, which recently acquired the old blast furnace plant of the Oregon Iron & Steel Co., Oswego, Oreg., built in 1894, at an expenditure of $300,000. About $100,000 will be spent within the next 60 days on improvements and following their completion, the stack will be blown-in on South American ore.

Acquires Chain Company

Possession of the Diamond Chain Co., York, Pa., has been acquired by the Rowe Calk Co., Hartford, Conn., in order to provide an independent supply of chain to the latter company for the manufacture of a patented anti-skid device. Work will be commenced soon on several extensions to the Chain company's plant and other improvements will be made as fast as the development of the business warrants. Samuel W. Horn of York, Pa., remains as president and factory manager of the Chain company. Other officers of that company are: William H. McLaughlin, Hartford, Conn., vice president; Warren D. Chase, Hartford, Conn., secretary, treasurer and general manager; S. Ralph Horn, York, Pa., assistant secretary, and E. S. Bestor, Hartford, Conn., assistant treasurer.

Negotiations Continue

William Morris Imbrie & Co., New York bankers, are negotiating for the purchase of the Seaman-Sleeth Co., Pittsburgh, manufacturer of rolls. J. S. Seaman, president of the company, is one of the best known members of the foundry trade in the country.

Financial Crop Ends

The new financing of the Star Drilling Machine Co., Akron, O., which is to be taken over by a new incorporation Aug. 7, includes a 100 per cent preferred stock dividend. The company, now incorporated at $1,000,000, of which $662,000 is outstanding, will become a $2,000,000 corporation. In August shareholders are to be given an amount of stock equal to their holdings in the old company plus a like amount of 7 per cent preferred. Common is now on a 1 per cent monthly basis.

* * *

An issue of $2,000,000 of preferred stock, authorized July 2, and an issue of $325,000 of common stock, authorized Feb. 23, 1916, is being made by the Trumbull Steel Co., Warren, O. Common stockholders of record July 12 are privileged to subscribe to the new preferred to the amount of 40 per cent of their holdings and to new common to the amount of 6 per cent of their holdings. Preferred stockholders are excluded from subscribing for any of the new preferred. Clearing the treasury of common stock will give the company an outstanding capitalization of $12,000,000 equally divided between common and preferred and is understood to be the forerunner of another common stock authorization, none of which, however, is to be issued at this time.

* * *

Rapid growth and expansion in the industry are shown in specific instances of capital increases. Recent increases in capitalization are as follows: The Defiance Machine Works, Defiance, O., from $600,000 to $1,200,000; the Columbus Anvil & Forging Co., Columbus, O., from $20,000 to $60,000; the Waite & Bartlett Mfg. Co., New York, from $10,000 to $100,000; the Erie Iron & Steel Co., Erie, Pa., from $100,000 to $500,000; the Landover Auto Truck Co., Chicago, from $300,000 to $1,500,000; the Bartlett All-Steel Scythe Co., from $75,000 to $250,000; the Liberty Steel Co., Warren, O., from $600,000 to $750,000; the Kelso-Burnett Electric Co., Chicago, from $1000 to $20,000; the Anderson Die Machine Co., Hartford, Conn., from $25,000 to $50,000, and the M. J. Walsh Machinery Co., Milwaukee, from $25,000 to $50,000.

Shipbuilding Boom is Slowing Up

Many Yards, as Yet on Paper, Find Goethals Preparing to Favor Established Companies—Government Contracts Create Confusion in Tool Deliveries —Crane Sales and Inquiries Are Features

ANNOUNCEMENT of the government's plan to construct two large shipyards has aroused considerable interest in the machine tool and conveying equipment markets, which had been excited for many weeks with negotiations arising from private shipbuilding projects. It is now believed that the shipbuilding bubble, as pertaining to a great number of these projects, has blown up. General Goethals' decision to concentrate the country's energies in a few big yards and to take full advantage of established facilities will dispel the hopes of the promoters of many of these new companies so far as obtaining governmental assistance is concerned. But machinery builders express assurance that the demand for equipment will be of huge volume, no matter who builds the ships. It is expected that many orders will be placed shortly by the agents whom the government is choosing to construct the two new yards. The construction of the work will be pushed with all possible speed and undoubtedly equipment needed in this connection will be rushed through builders' works ahead of everything else. To the ordinary buyer, at present, deliveries on punches and shears, plate-bending rolls, hydraulic equipment and other shipyard machinery are deferred from six to eight months.

The government is gradually exercising broader supervision over work at builders' plants, directing deliveries to users whose needs are considered most essential. Sometimes directions as to designations of tools are changed several times before the machines are finally delivered. For example, a builder had contracted with a private manufacturer to build a certain machine, but the government requisitioned the tool for one of its own plants. Later, however, the government placed an important order with the builder which required a machine of the type already commandeered, so the builder asked for the tool for its own use. One seller compares the present shifting around of orders with a checker game, although it is felt the authorities are dealing with the situation as reasonably as could be expected under the present conditions. Some builders, however, express belief that in some instances certain users have taken advantage of the fact that they have government contracts to obtain machines to utilize in private contracts. Any companies detected in such practice will lose their government contracts, it is said.

Both the machine tool and the crane market were dull last week. A number of inquiries appeared for one or two big machines of which there is a pronounced scarcity for delivery this year. Both the French and Japanese governments placed some large orders, the former for railroad and the latter for navy work. The Staten Island Shipbuilding Co. has inquired for one 15-ton locomotive crane and will require a 15-ton crane for its boiler shop, also two 50-ton cranes for its machine shop. The Delta Shipbuilding Co. will require two locomotive cranes, two fitting-out cranes and four overhead cranes.

Several of the manufacturers who have been figuring on ordnance contracts have failed to show the government as yet that they can perform this work successfully and equipment orders in connection with this work are being held in abeyance. The agreement reached at Washington last week between the steel producers and the government may have some influence on the policies of steel works as to plant extensions. An instance is noted of a company in the Pittsburgh district which was anxious to obtain a certain machine on the afternoon previous to that conference, but changed its mind immediately following the announcement. At least one big inquiry was issued by a middle western steel company the past week, however. This was the Ashland Iron & Mining Co., Ashland, Ky., which is asking for 21 cranes, including one ladle crane, a stripper, soaking pit cranes, an open-hearth charging machine and about 17 standard cranes.

The Niles-Bement-Pond Co., New York City, has submitted the lowest bid for furnishing two 15-ton bridge cranes, which may be increased to six, for the New York navy yard. The company agreed to ship two cranes in 365 days, and additional cranes in 400 days.

The bureau of yards and docks of the navy department has taken bids for furnishing and installing one 80-ton bridge crane, one or more 15-ton bridge cranes, two 5-ton bridge cranes and four 5-ton wall cranes in the smithery addition to the structural shop at the Philadelphia navy yard. The bureau receives bids July 23 for two coal-handling plants to be constructed at the navy yards at Norfolk and Philadelphia.

Chicago Dealers Expect Big Business

NUMEROUS inquiries received by Chicago dealers of machine tools portend a buying movement of all kinds of equipment within the near future. The placing of contracts by the government with several manufacturers in the Chicago district for gun mounts and shells has created a demand by manufacturers for equipment to enlarge their present capacities and to equip their plants for the production of supplies not heretofore produced. The Edward Valve Co., East Chicago, has received a contract for heavy shells and has purchased five 3-inch heavy-duty screw machines and is reported still to be in the market for large boring mills. The Linderman Machine Co., Muskegon, Mich., is said to have received a government contract for gun mounts and shells and is purchasing machines to facilitate the production of these supplies. Contracts have been let for two buildings at the Rock Island arsenal to be devoted to the production of field pieces and hand grenades. The contracts for the erection and equipment of these plants have been let to the Stone & Webster Co. and to the Westinghouse, Church-Kerr Co. The list of machine tool equipment, however, is being prepared by the quartermaster and will be issued shortly through the proper authorities. The American Can Co. has been searching the local market for tool-room equipment for immediate delivery. A Virginia shipbuilder has asked for bids on equipment for shipyard work. Although the buying during the past week has been at the same level maintained during the last few

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The modern military and naval aeroplane in active service is constantly subjected to and must withstand strains that are over-whelmingly out of proportion to its weight and constructional design.

There is consequently more than usual significance in the adoption of Agathon Alloy Steels by

The Curtiss Aeroplane Company

for use in various parts of their wonderful air craft, and it is not too much to say that Agathon Steels may play a prominent part in the winning of the war as they have done and will do in the industrial victories of peace.

"Agathon" Steels will serve your purpose best.

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Lower: Curtiss Flying Boat.

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CENTRAL STEEL CO.
MASSILLON, OHIO

Branch Offices—Detroit—326-27-28 Ford Bldg., F. Walter Guibert, District Representative; Cleveland—Hickox Bldg., The Hamill-Hickox Co., District Representatives; Chicago—1370 Peoples Gas Bldg., 122 South Michigan Blvd., A. Schaefer, District Sales Manager; Philadelphia—902 Widener Bldg., Frank Wallace, District Sales Manager; New York—J. E. Duckendorff & Co., 20 Broad St., General Export Agents.

weeks, the volume of inquiries has increased appreciably.

The general depot of the quartermaster corps is 3615 Iron street, Chicago, and is receiving bids until July 28 for valve grinding compound and for valve grinding tools.

Business Still Brisk with Cleveland Dealers

MACHINE tool dealers in the Cleveland territory are daily receiving inquiries for heavy engineering tools for installation in plants having government contracts. The demand is centered on large lathes, heavy-duty boring mills, vertical mills and floor type machines having a large capacity. Planers are finding a ready sale and nearly all inquiries are for machines with long tables. These specifications lead dealers to believe that such tools are to be used on government work. Deliveries are slowly receding. This is particularly true of heavy-duty machinery, but is by no means limited to large-swing lathes, which, for the past 60 days, have been dropping behind on shipping dates. Some builders are offering small tools for immediate shipment and it is not unusual to find eight to 10 small-swing lathes on dealers' floors. Grinding equipment is picking up sharply, screw-cutting lathes are more popular and builders offer good deliveries on small-sized equipment of this type. Milling machines, both universal and plain, are no longer features of the local tool market, but a steady demand for them exists. The Kelley Mfg. Co., Bucyrus, O., has issued an inquiry for some miscellaneous equipment, including one or two heavy machines. The Ohio Locomotive Crane Co., Bucyrus, O., has entered the local market for several heavy-duty lathes. No price changes have been noted in the Cleveland market.

Pittsburgh Plants Purchase Freely

MACHINE tools for munition-making purposes are becoming extremely scarce in the Pittsburgh district. Interests having contracts for government work have been conspicuous buyers of lathes, punches, shears and presses. The Westinghouse interests are reported to have purchased additional machinery for munition work at plants in local and eastern territory, although no official announcement regarding government work has been made by the Westinghouse concerns. The Thomas Spacing Machine Co., which is erecting a plant near Pittsburgh, has purchased a number of machine tools. The Pittsburgh Steel Products Co. has completed plans for a seamless tube mill at Allenport, Pa., where a site of 300 acres recently was purchased. The National Tube Co., Pittsburgh, is buying equipment for a benzol plant at Lorain, O. The Wire Drawing Machine Co., New Brighton, Pa., recently incorporated, likely will enter the market for a number of machine tools at an early date, it has been announced.

New Construction and Equipment

Concise and Timely Business Building Opportunities from the Field of Industry

Along the Middle Atlantic Seaboard

BROOKLYN, N. Y.—Joseph G. Kessler & Co. has been incorporated with $15,000 capital to refine and smelt zinc ore and its products. J. G. Kessler, C. J. Goldberg and B. Goldberg, 105 Kent avenue, are the incorporators.

BUFFALO. — The George Schautz Engineering Co., capitalized at $30,000, recently has been chartered to manufacture cranes and engage in a general engineering business. F. J. Leuthner, G. Schautz and J. A. Schautz are the incorporators.

KINGSTON, N. Y.—The Kingston Shipbuilding Corp. recently has been organized with a capitalization of $500,000 to engage in the shipbuilding business. J. D. Schoonmaker, J. O. Winston and M. J. Look are the incorporators.

NEWBURGH, N. Y.—The Fabrikoid Co., Hains Cross road, will build a 1-story boiler house, 30 x 40 feet, to cost $15,000.

NEW YORK. — The Barney-Hocke-Ahlers Corp. recently has been incorporated with $50,000 capital to engage in a business as construction engineer. J. G. Hocke, J. G. Ahlers and W. J. Barney, 1187 Lexington avenue are the incorporators.

NEW YORK.—The Columbia Motor Corp. has been organized with $250,000 capital to engage in the manufacture of engines and boilers by C. S. Ashley, J. S. Galland and H. J. Neuschafer, 15 John street.

NEW YORK.—The Willard Storage Battery Co., 228 West Fifty-eighth street, has awarded the contract for a $100,000 factory building.

SYRACUSE, N. Y.—Frederick G. Bourke, 701 McBride street, will build a machine shop and armature factory to be 2-story, 55 x 130 feet and cost $8000.

SYRACUSE, N. Y.—The Sanford Motor Truck Co., manufacturer of motor trucks of from 1 to 5-ton capacity, plans additions to its plant on West Fayette street.

UTICA, N. Y.—The Savage Arms Corp. has made appropriations for plant additions at Utica and at Sharon, Pa., to cost over $1,000,000.

BEAVER FALLS, PA.—The Howard Stove Co. will build a molding plant addition to cost $12,000.

MARIETTA, PA. — The National Casting Co. is improving the former plant of the Marietta Mfg. Co. which it recently purchased.

HAMBURG, PA. — Neiman & Saul have awarded the general contract for a 1-story foundry addition. The estimated cost of the structure is $10,000.

HAZLETON, PA. — The Pennsylvania Stripping, Quarry & Construction Co. plans to build a plant, inclusive of a foundry, for the purpose of manufacturing some of its own equipment.

PHILADELPHIA.—The Niagara Mfg. Co. will build 2-story plant, 70 x 80 feet, at 5432 Lancaster avenue.

PHILADELPHIA.—Frank E. Hahn, architect, is drawing plans for a 2-story, 70 x 80-foot manufacturing building to be erected at Fifty-fourth street and Lancaster avenue for the Niagara Mfg. Co.

PHILADELPHIA. — A permit has been granted to Armstrong & Co., for the erection of a manufacturing addition for the Walker Electric Co. at 2337 Callowhill street.

PHILADELPHIA.—The Belfield Mfg. Co., brass founder, plans to build several factory buildings at Twentieth and Cambria streets. W. Steel & Sons are the engineers.

PHILADELPHIA.—Plans have been made by the city to construct a second pipe line to the navy yard. The estimated cost of the project is $25,000.

SELLERSVILLE, PA.—The United States Gage Co. is having plans prepared for 3-story addition, 30 x 50 feet.

SOUTH BETHLEHEM, PA.—The Bethlehem Steel Co. has awarded the general contract for a 1-story cupola, 28 x 51 feet, to the Ochs Construction Co., Allentown.

WILLIAMSPORT, PA.—The Williamsport Wire Rope Co. has had preliminary plans drawn for a pump house and reservoir.

BAYONNE, N. J. — The Electro-Dynamic Co., Avenue A and North street, will build a 1-story plant addition, 100 x 122 feet. John

ONE
30-Ton Open Hearth
FURNACE
Now Ready.

Who wants the Entire Production of it for Ingots or Shell Blanks?

Hubbard Steel Foundry Co.
EAST CHICAGO, IND.
All Kinds of Iron and Steel Rolls and Steel Castings.

W. Ferguson Co., 152 Market street, Paterson, N. J., has the contract.

BAYONNE, N. J.—Babcock & Wilcox Co. contemplates the erection of a machine shop to cost about $150,000.

BLOOMFIELD, N. J.—Bloomfield Brass Foundry, recently organized, will build a brass foundry and machine shop at 40 Myrtle avenue.

CAMDEN, N. J.—R. M. Hollingshead & Co. will build an addition to their factory on North Ninth street.

HARRISON, N. J.—The Crucible Steel Co. of America will erect a 1-story addition, 200 x 400 feet, for a forge building.

HOBOKEN, N. J.—Keuffel & Esser Co. manufacturers of engineering instruments, will build a 5-story factory on Grand street and 4-story factory on Jefferson street.

JERSEY CITY, N. J.—The Swenson Ship Building Co. has been incorporated with $500,000 capital to establish a shipbuilding plant by A. F. Swenson, H. T. Alexander, G. N. Nelson.

JERSEY CITY, N. J.—The M. W. Kellogg Co., manufacturer of piping, plans to build a 1-story shop to cost about $45,000.

NEWARK, N. J.—William Bal, Inc., will erect a 3-story factory building, 90 x 189 feet, at St. Francis and Kossuth streets to cost $80,000. Jordan Green, 27 Clinton street, is the architect.

NEWARK, N. J.—The New York Shipbuilding Corp., 120 Broadway, New York, contemplates building a shipyard at Newark Meadows.

NEWARK, N. J. — A. W. Moore, Mt. Prospect avenue and Heller Parkway, will erect a 2-story brick theater and office building to cost $50,000.

PAULSBORO, N. J.—The Mantua Chemical Co. has let the contract for two additions to its crusher plant.

PATERSON, N. J.—The Thomas Smith Machinery & Supply Co. has been incorporated with $25,000 capital to deal in and install machinery and accessories by Thomas Smith, John C. Ryle, and others.

PATERSON, N. J.—A. Smith, manufacturer of plumbing supplies, plans to erect a factory at 55 Hamilton avenue, to cost about $11,000.

ROSELLE PARK, N. J. — The Watson, Stillman Co., Aldene, N. J., has drawn plans for a 1-story machine shop, 62 x 132 feet.

TRENTON, N. J. — The Delion Tire & Rubber Co., incorporated with $3,500,000 capital, will build two additions to its plant on East State street.

TRENTON, N. J.—The Home Rubber Co. has purchased a site adjoining its plant and will build an addition.

WEST HOBOKEN, N. J.—The Schwarzenbach-Huber Co. will build a 1-story addition on Spring street, to cost $40,000.

WILMINGTON, DEL.—The Butte Southern Copper Mining Co. has been incorporated with $1,000,000 capital to do general mining, milling and smelting. Cornelius A. Cole, Hackensack, N. J.; Robert A. Van Voorhis, Jersey City, N. J., and Paul E. Britzsch are the incorporators.

LYNCHBURG, VA.—The Glamorgan Pipe & Foundry Co. plans to build a 40 x 80-foot addition to its plant. An expenditure of $20,000 is involved.

MARION, VA. — The Federal Equipment Co., recently incorporated with $75,000 capital, plans to build a plant to manufacture railroad cars and equipment. W. H. Teas is interested in the project.

METOMKIN, VA.—The Washington-Newport News Short Line will build a drawbridge over the Potomac river near Metomkin. The draw will be 300 feet long with truss and girder approaches. F. S. Gannon, 55 Liberty street, New York, is president of the company.

Activities in the Central States

APPLETON, WIS.—Van Ryn & DeGelleke, architects, Caswell block, Milwaukee, are preparing plans for a boiler and power plant addition, 45 x 65 feet, for Lawrence College. Dr. Samuel Plantz is president.

APPLETON, WIS. — A complete foundry unit, 50 x 75 feet, is being erected and equipped by the Killian-Strait Tractor Co., Appleton, a large builder of gas and oil tractors and trucks.

BELOIT, WIS.—Work will be undertaken soon by the Lipman Refrigerator & Car Mfg. Co., Beloit, on the first buildings of its new refrigerator car building and installation plant. Plans have been completed for a machine shop and foundry, sheet metal and woodworking shop, office, and track sheds.

RACINE, WIS.—The Chicago, Racine & Milwaukee railway has had plans prepared by A. S. Hecht, 154 West Randolph street, Chicago, architect, for a light manufacturing building approximately 100 x 150 feet, to be of reinforced concrete construction and to cost $200,000.

MANITOWOC, WIS.—The Worden-Allen Co., Milwaukee, has started work on a new power house for the Wisconsin Public Service Co. at Manitowoc. The work requires 350 tons.

MILWAUKEE.—The Globe Seamless Steel Tubes Co., F. J. O'Brien, superintendent, contemplates extensions to cost about $100,000.

MILWAUKEE. — The Chicago & Northwestern railroad, W. H. Finley, chief engineer, awarded the general contract for the erection of the power house, machine shop and blacksmith shop for the new $350,000 roundhouse at the Chase yards, Milwaukee, to the Walsh Construction Co., Chicago.

MILWAUKEE. — The Westinghouse Lamp Co., 3302 Center street, has awarded contracts for the construction of coal bunkers and other improvements costing $25,000 to the Worden-Allen Co., steel, and the Fuldner Construction Co., 602 Majestic building, general contract.

NASHOTAH, WIS. — L. E. Utter and Ralph Howland have organized the Nashotah Trailer Truck Co. and will manufacture a truck trailer designed by Mr. Howland.

RACINE, WIS.—Peter Buengers will build and equip a welding shop on Eleventh street,

Changes Indicate Trade Activity

The American Ore Reclamation Co. has removed its Pittsburgh offices from the Oliver to the Renshaw building.

Hill, Clarke & Co., Chicago, machinery dealers, have purchased property at 647 Washington street and plan to erect a modern show room and office building.

Offices of E. A. Schwarzenberg, Cleveland, dealer in scrap iron, have been removed from the Leader-News building to 428-429 Guardian building.

The main offices of the Simplex Machine Tool Co. have been removed from Cleveland to Hamilton, O., in order to expedite factory and office efficiencies.

The James Russell Boiler Works, Boston, has taken possession of its new plant at Dewar and Auckland streets, Savin Hill district, Boston.

General offices of the Joseph Wangler Boiler & Sheet Iron Works Co. have been removed from 1547 North Ninth street, where they have been located for half a century, to the Federal Reserve Bank building, St. Louis.

Announcement has been made of the change in name of the Kugel-Miner-Morse, Inc., Erie, Pa., to that of the Miner-Morse Corp. No factory changes are contemplated.

The C. W. Cullen Machinery Co. has announced the removal of its headquarters from Cincinnati to the Leader-News building, Cleveland.

The Universal Valve Co., Chicago, has moved its offices to Burlington, Wis., where its goods are being manufactured by the Burlington Brass Co.

Main offices of the A. C. Humphreys Co., Detroit, pig iron, steel, metals and foundry supplies, have been removed to 1201-1203 Book building, Washington boulevard, Detroit. Branch offices have been opened at 556 Leader-News building, Cleveland, and 1501 Arrott building, Pittsburgh.

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If you were a foreign buyer you would realize what an advantage this combination of services means in buying goods made in the United States.

With every detail of securing the materials or products desired, of shipping them overseas and of handling the credits in the hands of one responsible house, you could depend on getting your order delivered just as you want it.

It is natural that the big industrial concerns abroad like to deal with FEDEX when it means the elimination of all friction and misunderstanding in supplying their wants.

We may have filled many orders for just such products as you manufacture in which case we would be glad to tell you what you can expect in the way of sales abroad. Write us about your line and send us your catalogues.

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near Park avenue, and do general machine repair work.

RACINE, WIS.—The Mohr-Jones Hardware Co. has entered the sheet metal manufacturing field and is erecting a shop. The company has increased its capital stock from $60,000 to $150,000 to provide adequate working capital.

RACINE, WIS. — The Manufacturers' National Bank of Racine has awarded the general contract for the erection of its new bank and office building, costing $100,000, to the Anderson-Stranberg Co., 19 South LaSalle street, Chicago. The architects are A. H. Andrews & Co., Chicago.

RACINE, WIS.—The Racine Rubber Co. will enlarge its power plant and install new boilers, generators, automatic stoking machinery, etc. Plans now are being completed.

SHEBOYGAN, WIS. — The Fargo Engineering Co., Consumers building, Chicago, has been engaged by the Eastern Wisconsin Electric Co. to prepare plans for the new 60 x 90-foot power house. The Eastern Wisconsin company is owned by the American Public Utilities Corp., Grand Rapids, Mich.

DETROIT.—The Diamond Power Specialty Co., R. Herman, president, is receiving bids on a $70,000 factory building 112 x 128 feet.

DETROIT.—The Great Lakes Engineering Co .plans plant addition to cost about $75,000. Smith, Hinchman & Grills are the architects.

DETROIT.—The Dodge Bros. Motor Car Co. plans to build a 7-story, concrete and brick addition to its plant in Detroit.

DETROIT.—The Hayes Mfg. Co., maker of auto parts, is receiving bids on a 3-story, $9000 addition to its plant.

DETROIT.—The Michigan Copper & Brass Works has awarded the contract for a 1-story addition to its plant on Jefferson avenue.

GRAND RAPIDS, MICH. — The Clipper Belt Lacing Co. has let the general contract for a 1-story, 50 x 61-foot engine room, to cost $15,000, to the Hauser, Owen & Ames Co.

JACKSON, MICH.—The American Fork & Hoe Co. has awarded the general contract for a 3-story addition to its factory.

MUSKEGON, MICH. — The Muskegon Smelting Co. has been chartered with $10,000 to refine and smelt ores. William B. Lakey, W. E. Lakey and C. H. Adams are the incorporators.

YPSILANTI, MICH.—The United States Pressed Steel Co. has had plans drawn for a 1-story factory building 50 x 100 feet.

CHICAGO.—G. M. Marks, 1239 West Madison street, has been granted a permit to erect a 3-story brick factory to cost $60,000. W. P. Whiting is the architect.

CHICAGO.—The Peacock estate is planning to build a 3-story, 100 x 174-foot factory to cost $75,000. Bids will be received through Architect E. N. Brydges, 64 East Van Buren street.

CHICAGO.—B. Heller & Co., manufacturing chemists, 3925 Calumet avenue, contemplate the erection of a 6-story extension to their factory to cost $60,000.

CHICAGO.—The Royal Enameling & Mfg. Co. has purchased a 42-acre site and plans to improve the property.

CHICAGO. — Birkenstein & Sons, metal dealers, have purchased a site on Hawthorne street and plan to erect a $30,000 warehouse.

CHICAGO.—O. W. Richardson & Co. have purchased a site on South Racine avenue and plan to erect a 6-story warehouse to cost $300,000.

CHICAGO.—Architect J. C. Llewellyn, 38 South Dearborn street, has prepared sketches for a 3-story high school for Benton Harbor, Mich., to cost $150,000.

CHICAGO. — The Chicago American has engaged Architect Paul Gerhardt, 64 West Randolph street, to prepare plans for a 4-story, 75 x 130-foot storage building to cost $120,000.

CHICAGO.—Alexander Bauer is receiving bids through Architect William F. Pagels, 19 South La Salle street, on a 7-story, reinforced concrete, 75 x 100-foot warehouse.

CHICAGO.—Gustav Kittel & Co. plan to erect a $12,000, 40 x 66-foot factory to be one story high.

CHICAGO. — William B. Klein plans to erect a 30 x 50-foot addition to his plant at 1227 School street.

CHICAGO.—Armour & Co. plans to erect a 2-story mechanical shop 110 x 304 feet to cost $70,000.

CHICAGO.—The Gibson Motor Car Co., 5424 Kimbark avenue, plans to erect a 100 x 200-foot, 2-story, garage and machine shop to cost $50,000.

CHICAGO. — The International Airship Corp., 36 South State street, will begin work soon on a 1-story reinforced concrete and steel, 100 x 600-foot factory and three hangars, 80 x 100 feet. The factory will cost $100,000, exclusive of the hangars. Architect William H. Pruyn Jr., 122 South Michigan avenue, will award contracts.

CHICAGO. — The Elmes Engineering Co., 232 North Morgan street, plans to erect a $35,000, 50 x 125-foot, 1-story machine shop.

CHICAGO.—The Anchor Leather Co., 1001 West Division street, contemplates the erection of a 3-story, 50 x 140-foot addition to its tannery.

CHICAGO.—The Patent Vulcanite Roofing Co., 2246 West Forty-ninth street, will erect a 1-story mill construction addition 140 x 175 feet. M. C. Keown & Bros., 112 West Adams street, have been awarded the general contract.

CHICAGO. — The American Bioscope Co. plans to erect a 40 x 75-foot laboratory and office to cost $18,000.

CHICAGO. — The Chicago Hardware Co. has awarded D. M. Reid & Co., 140 South Dearborn street, the contract for a 50 x 96-foot, 2-story ship building to cost $20,000.

CHICAGO.—Kurz-Downey Co. have been granted permission to erect a 100 x 200-foot warehouse to cost $15,000.

CHICAGO. — The American Fuel Saving Co. has been incorporated with $50,000 capital by Charles T. Hardy, Albert E. Mers and Frank V. Nugteren.

CHICAGO.—The Great Lakes Mfg. Co. has been chartered with $12,000 capital to engage in a general manufacturing business by Henry C. Pomeroy, William A. Witt and Frank N. Tomlinson.

CHICAGO. — The Midland Electric Steel Co. recently has been chartered with $10,000 capital by Joseph S. Samuels, Stanley Filip and R. I. Davis.

CHICAGO. — The Security Tool Works, Inc., has been incorporated with $10,000 capital by H. B. T. Chandler, W. L. Lindgren and B. Clarke.

CHICAGO.—The W. F. Hall Printing Co. has completed plans for a new plant to cost $900,000. The new building will be 130 x 341 feet, seven stories high and of heavy mill construction.

CHICAGO.—The Ocean Floating Safe Co. plans to erect a 146 x 221-foot, $70,000 factory. The company now is located at 803 West Madison street.

CHICAGO. — The Metal Block & Ingot Co. has leased its plant at 2215 Elston avenue to the Marblehead Lime Co. The property is to be improved with a 1-story concrete building.

HEGEWISCH, ILL.—The West Steel Car & Foundry Co. have had plans prepared by Dillard & Bacon, 343 South Dearborn street, engineers, for a 1-story, 45 x 95-foot addition to its pump building.

SOUTH CHICAGO, ILL. — The Illinois Steel Co. has been granted permission to erect a 1-story steel plate mill to cost $100,000. The buildings will be 98 x 207, 85 x 173, and 116 x 268 feet, respectively.

HAMMOND, IND.—The Beatty Machine & Mfg. Co. recently has been chartered with $250,000 capital to manufacture machinery of all kinds. William R. Beatty, P. H. Joyce and H. J. Cassady are the incorporators.

INDIANAPOLIS.—The plant of the Montcalm Chemical Co. was damaged by fire involving a loss of $50,000. The plant is to be rebuilt.

INDIANAPOLIS.—The Van Camp Packing Co. has had plans prepared by Architect A. G. Zimmerman, 10 South La Salle street, Chicago, for a 7-story, 125 x 343-foot reinforced concrete packing plant to cost about $300,000.

AKRON, O.—The Ohio Wire Goods Mfg. Co. recently has been chartered with $100,000 capital to manufacture wire goods. C. F. Schnee, John C. Grim, Joseph Thomas, F. I. Russ and C. E. Humphrey are the incorporators.

AKRON, O.—Bids will be taken soon by C. F. Beels, director of public works for water works extensions and improvements. About 60 miles of 4 and 6-inch pipe are involved.

BERGHOLZ, O.—The Bergholz Coal Mining Co. has been incorporated with $100,000 capital by William W. White, Thomas H. Garry, N. E. Snavely, Robert G. McCreary and H. W. Henderson.

CANTON, O.—The American Motor Car Co., capital $100,000, recently has been chartered to make motor cars by Clyde A. Volzer, William E. Patterson, Adolph S. Vance, Jacob M. Glaser and Moritz Glaser.

CLEVELAND.—The Cleveland Electric Illuminating Co. has filed plans for a $100,000 foundation and retaining wall for an electric station, 160 x 195 feet.

CLEVELAND. — The Buckeye Ribbon & Carbon Co., James Donovan, president, has commenced work on a new 50 x 150-foot plant to cost about $35,000.

CLEVELAND.—The Cleveland Milling Machine Co. has made application for a permit to erect a 1-story, $18,000 addition.

CLEVELAND.—The W. J. Watson Co., Leader News building, is preparing plans for a $400,000 factory building for the White Motor Co.

CLEVELAND.—The Stevens Iron Works & Fireproofing Co., W. A. Stevens, president, has purchased a site and contemplates the erection of a 2-story factory building.

CLEVELAND.—A permit has been granted for the erection of the Euclid-Doan market house, to cost about $100,000; part of a $600,000 project.

CLEVELAND.—The Ideal Tire & Rubber Co., through the Osborn Engineering Co., has awarded a contract to the Hunkin-Conkey Construction Co. for a $150,000 factory building.

CLEVELAND.—The Cleveland Motor Plow Co., Rollin M. White, president, is having plans prepared for a plant in East Cleveland to cost about $300,000.

CLEVELAND.—The City Machine Co. has purchased a site 140 x 160 feet and plans to improve it with a manufacturing building.

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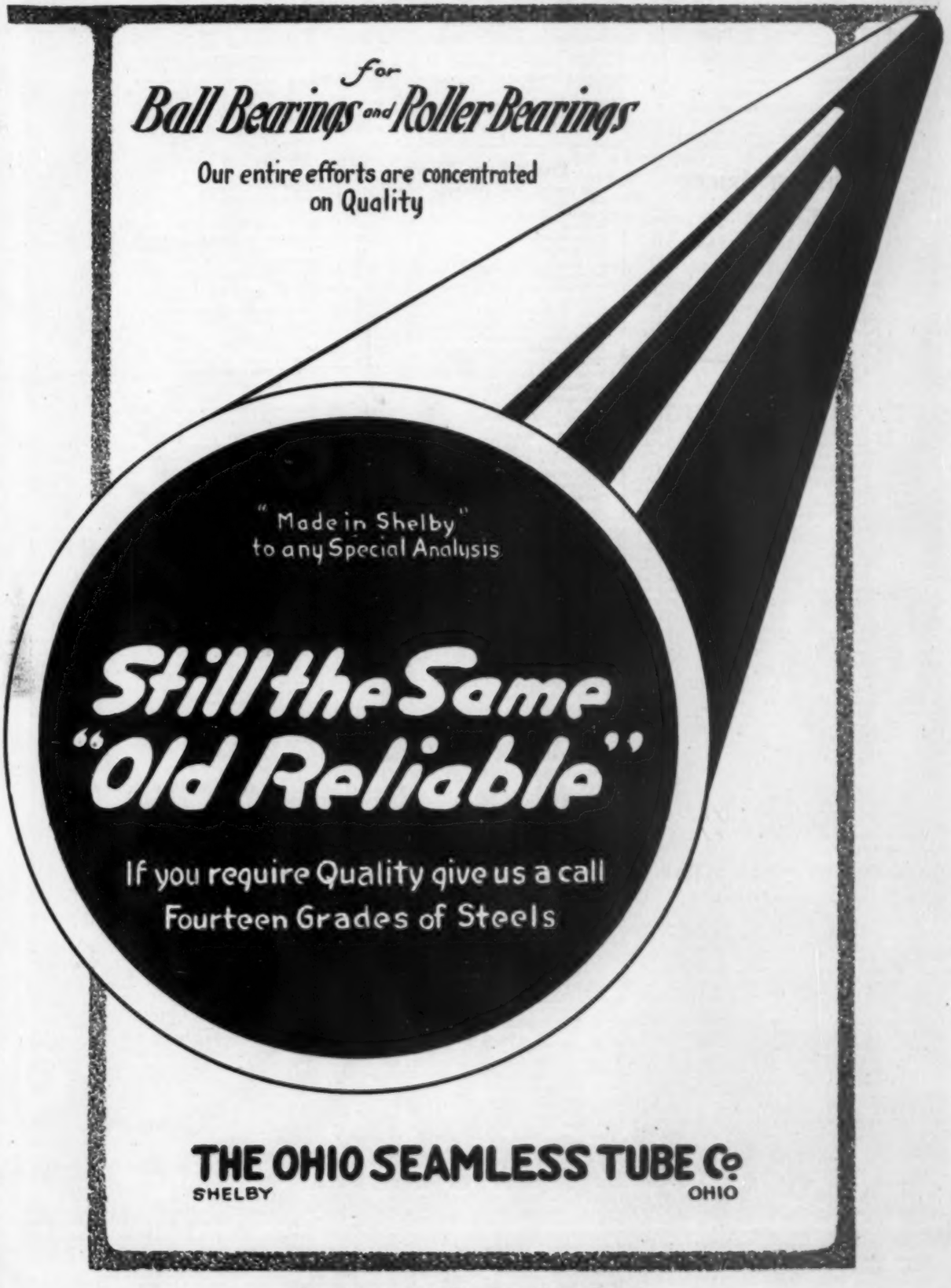
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"Made in Shelby" to any Special Analysis
Still the Same "Old Reliable"
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Fourteen Grades of Steels
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Iron and Steel Prices

Corrected to Tuesday noon

IRON ORE

Superior Ores, Per Ton, Lower Lake Ports.	
Old range Bessemer, 55 iron	5.95
Mesabi Bessemer, 55 iron	5.70
Old range non-Bess., 51½ iron	5.20
Mesabi non-Bess., 51½ iron	5.05
Port Henry Ores, non-Bessemer, Per Unit,	
Delivered Eastern Pennsylvania.	
Old Bed, crude 55 iron	10.50c to 11.00c
Old Bed., concent., 65 iron	11.00c to 11.50c
Harmony, concent., 63 iron	11.50c to 11.75c
Lump (at mines)	$5.75

WAREHOUSE PRICES

Steel bars, Chicago	4.50c
Steel bars, Cleveland	5.00c
Steel bars, Detroit	4.50c
Steel bars, Philadelphia	5.00c to 5.50c
Steel bars, New York	5.00c
Steel bars, St. Louis	4.55c
Steel bars, Cincinnati	5.00c
Steel bars, St. Paul	4.60c
Steel bars, Buffalo	4.60c to 5.10c
Iron bars, Chicago	4.50c
Iron bars, Cleveland	4.95c
Iron bars, Detroit	4.50c
Iron bars, St. Louis	4.45c
Iron bars, Cincinnati	5.00c
Iron bars, Philadelphia	5.00c
Iron bars, New York	5.00c
Shapes, Chicago	5.00c
Shapes, Detroit	5.00c
Shapes, St. Louis	5.05c
Shapes, St. Paul	5.10c
Shapes, New York	5.25c
Shapes, Cleveland	5.25c
Shapes, Philadelphia	5.00c to 5.50c
Shapes, Buffalo	5.10c to 5.35c
Shapes, Cincinnati	5.25c
Plates, Chicago	8.00c
Plates, Detroit	9.00c to 10.00c
Plates, St. Louis	7.05c to 7.55c
Plates, St. Paul	7.10c
Plates, New York	9.00c
Plates, Cleveland	7.50c
Plates, Philadelphia	9.50c to 10.00c
Plates, Cincinnati	9.50c
No. 10 blue anl. sheets, Chi.	9.50c
No. 10 blue anl. sheets, Cleve.	9.50c
No. 10 blue anl., Buffalo	11.00c to 11.75c
No. 10 blue anl. sheets, St. L.	9.55c
No. 10 blue anl. sheets, Cinci.	9.50c
No. 10 blue anl. sheets, St. Paul	9.60c
No. 10 blue annealed, Detroit	9.50c
No. 28 black sheets, Chicago	9.50c
No. 28 black sheets, Cleve.	9.50c
No. 28 black sheets, Cincin.	8.15c
No. 28 black, Detroit	9.50c
No. 28 black sheets, St. L.	9.85c
No. 28 black sheets, St. Paul	9.60c
No. 28 galv. sheets, Chicago.	11.00c
No. 28 galv. sheets, Cleve.	11.00c
No. 28 galv. sheets, Cincin.	10.15c
No. 28 galvanized, Detroit	11.00c
No. 28 galv. sheets, St. L.	11.25c
Hoops, Cleveland	6.00c
Hoops, Detroit	7.00c

IRON AND STEEL SCRAP

STEEL WORKS USE
(Gross Tons)

Bundled sheets, Pittsburgh	$26.00 to 27.00
Bundled sheets, Cleveland	25.00 to 27.00
Bundled sheets, Buffalo	22.00 to 23.00
City wrought, short, N. Y.	35.00
Frogs, switches, guards, St. L.	36.00 to 38.00
Heavy melting steel, Pitts.	38.00 to 40.00
Heavy melting steel, Buffalo	36.00 to 38.00
Heavy melting steel, Chgo.	34.00 to 37.00
Heavy melt'g steel, Cleveland.	37.00 to 38.00
Heavy melting steel, Cinci.	37.50 to 38.00
Heavy melting steel, east. Pa.	35.00 to 37.00
Heavy melt'g steel N. Y.	35.00 to 36.00
Heavy melting steel, St. L.	39.00 to 40.00
Heavy melt'g steel, Birming.	21.00 to 22.00
Hydraulic pressed sh'ts, Cleve.	35.00 to 36.00
Hydraulic press. sheets, Pitts.	35.00
Hydraulic pressed sh'ts, Chgo.	29.00 to 29.50
Low phos. steel, Buffalo	50.00 to 55.00
Low phos. steel, Pittsburgh.	55.00 to 58.00
Low phos. steel, eastern Pa.	56.00 to 58.00
Shoveling steel, Chgo.	32.50 to 34.00
Shoveling steel, St. Louis	35.00 to 36.00
Steel rails, short, Chicago	44.00 to 45.00
Steel rails, short, Cleveland.	46.00 to 47.00
Steel rails, short, St. Louis.	41.00 to 42.00
Steel rails, old, Birmingham.	27.00 to 28.00
Stove plate, Cincinnati	19.75 to 20.00
Stove plate, St. Louis	20.00 to 21.00
Stove plates, N. J. points	22.00
Stove plate, Birmingham	17.50 to 18.00
Stove plate, Buffalo	22.00 to 23.00
Stove plate, eastern Pa.	23.00 to 24.00
Stove plate, Pittsburgh	25.00

(Net Tons)

Boiler plate, cut, No. 1, Chgo.	25.00
Boiler plate, cut, No. 1, St. L.	23.00 to 24.00
Bundled sheet, Cincinnati	21.50 to 22.00
Knuckles, coup., Chicago	41.00 to 42.00
Knuckles, coup., St. Louis	34.00 to 35.00
Springs, Chicago	42.00 to 43.00
Stove plate, Chicago	21.50 to 22.50
Stove plate, Cleveland	22.00 to 22.50

Freight Rates, Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$0.95
Newark, N. J.	2.98
Boston	3.18
Philadelphia	2.78
Pittsburgh	.95
St. Louis	3.18
Minneapolis, St. Paul	4.54
Buffalo to:	
Albany, N. Y.	$1.26
New England (rail)	2.58
New York and Brooklyn (rail)	2.58
Virginia furnaces to:	
Boston docks (r. and w.)	$3.05
New England (all rail)	3.25
New York dock (r. and w.)	2.88
Birmingham, Ala., to:	
Cincinnati	$2.90
Chicago	4.00
Cleveland	4.00
Louisville, Ky.	2.65
Minneapolis, St. Paul	5.85
New York (r. and w.)	4.25
Philadelphia (r. and w.)	4.00
Pittsburgh	4.90
Savannah, Ga.	2.75
St. Louis	3.40
Chicago to:	
Des Moines	$2.80
Milwaukee	.50
Minneapolis, St. Paul	2.00
Moline, Ill.	1.40
Omaha	3.58
St. Louis	1.58
Ironton and Jackson, O., to:	
Chicago	$2.54
Cincinnati	1.26
Cleveland	1.62
Detroit	1.81
Indianapolis	1.58
Minneapolis, St. Paul	4.54
Duluth, Minn., to:	
Minneapolis-St. Paul	$1.25
Mayville, Wis.:	
Minneapolis-St. Paul	$1.75

Freight Rates, Finished Material

Pittsburgh, carloads, per 100 lbs., to:	
New York	16.9 cents
Philadelphia	15.9 cents
Boston	18.9 cents
Buffalo	11.6 cents
Baltimore	15.4 cents
Cleveland	10.5 cents
Cincinnati	15.8 cents
Chicago	18.9 cents
Detroit	15.7 cents
Minneapolis and St. Paul	32.9 cents
Denver	83.6 cents
St. Louis	23.6 cents
New Orleans	30 cents
Birmingham	45 cents
Pacific coast (all rail)	73.9 cents
Pacific coast (tin plate)	70 cents
Pacific coast, via Panama	61.0 cents

IRON MILL USE
(Gross Tons)

Busheling No. 1, Buffalo	33.00 to 34.00
Busheling, No. 2, Buffalo	21.00 to 22.00
Busheling, No. 1, Pittsburgh.	27.00 to 28.00
Cast borings, New York	21.50 to 22.00
Cast borings, eastern Pa.	22.00 to 22.50
Cast borings, Buffalo	21.00 to 22.00
Cast borings, Pittsburgh	24.00 to 25.00
City wrgt., long, New York	40.00
Forge flashings, small, Cleve.	33.00 to 34.00
Forge flashings, large, Cleve.	31.50 to 32.50
Forge, No. 1, eastern Pa.	26.00 to 28.00
Grate bars, Buffalo	22.00 to 23.00
Grate bars, N. J. points	20.00
Iron axles, Pittsburgh	55.00 to 60.00
Iron axles, Cincinnati	46.00 to 46.50
Iron axles, eastern Pa.	50.00 to 55.00
Iron axles, Buffalo	55.00 to 60.00
Iron rails, Chicago	45.00 to 46.00
Iron rails, Buffalo	45.00 to 46.00
Iron rails, Cincinnati	36.00 to 36.50
Iron rails, St. Louis	44.00 to 45.50
Iron rails, Cleveland	50.00 to 51.00
Machine turnings, Buffalo	$20.00 to 21.00
Machine shop turnings, N. Y.	20.00
Mach. shop turnings, Pitts.	23.50 to 25.00
Mch. shop turnings, east. Pa.	21.50 to 22.00
Machine turnings, Birming.	12.00 to 13.00
R. R., mch. cast, No. 1, Buff.	32.00 to 33.00
R. R. wrought, 1, Buffalo	48.00 to 50.00
R. R. wrgt., No. 1, east. Pa.	50.00 to 55.00
R. R. wrought, No. 1, Pitts.	47.00 to 48.00
R. R. wrought, 1, B'ham.	30.00 to 31.00
Wrought pipe, Buffalo	33.00 to 34.00
Wrought pipe, eastern Pa.	36.00 to 37.00
Wrought pipe, New York	38.00

(Net Tons)

Angle bars, iron, Chicago	$42.00 to 43.00
Angle bars, steel, St. Louis.	34.00 to 34.50
Arch bars & transoms, St. L.	41.00 to 42.00
Arch bars & Transoms, Chgo.	45.00 to 46.00
Busheling, No. 1, Chicago.	29.00 to 30.00
Busheling, No. 1, Cincinnati.	22.00 to 22.50
Busheling, No. 1, Cleveland.	27.00 to 28.00
Busheling, No. 1, St. Louis.	27.50 to 28.50
Busheling, No. 2, Chicago.	22.00 to 23.00
Cast borings, Cincinnati	14.00 to 14.50
Cast borings, Cleveland.	19.00 to 19.50
Cast borings, St. Louis	16.50 to 17.50
Cast borings, Chicago	17.00 to 18.00
Cut forge, Chicago	36.50 to 37.50
Grate bars, Cleveland	23.50 to 24.50
Iron axles, St. Louis	49.00 to 50.00
Iron axles, Chicago	47.00 to 48.00
Iron axles, Cleveland	52.00 to 53.00
Machine shop turnings, Chgo.	18.00 to 19.00
Mach. shop turnings, Cleve.	17.50 to 18.25
Machine shop turn'gs, Cinci.	14.00 to 14.50
Mach. shop turnings, St. L.	18.00 to 19.00
Pipes and flues, Cleveland	28.00 to 29.00
Pipes and flues, Chicago	26.50 to 27.50
Pipes and flues, St. Louis	24.00 to 25.00
Railroad wrought, 1, Cleve.	48.00 to 49.00
Railroad wrgt., No. 1, Chgo.	40.00 to 41.00
Railroad wrought, 1, Cinci.	36.00 to 36.50
Railroad wrought, 1, St. L.	39.00 to 40.00
Railroad wrgt., No. 2, Chgo.	36.50 to 37.50
Railroad wrought, 2, St. L.	37.00 to 38.00

IRON OR STEEL WORKS USE
(Gross Tons)

Axle turnings, Cleveland	$27.00 to 28.00
Axle turnings, Buffalo	28.00 to 29.00
Shafting, New York	50.00
Shafting, eastern Pa.	48.00 to 50.00
Steel car axles, Birmingham.	35.00 to 36.00
Steel car axles, New York.	58.00
Steel car axles, Buffalo	55.00 to 60.00
Steel car axles, Cleveland	54.00 to 55.00
Steel car axles, Pittsburgh.	55.00 to 60.00
Steel car axles, eastern Pa.	50.00 to 55.00

(Net Tons)

Shafting, St. Louis	37.00 to 39.00
Steel car axles, St. Louis	49.00 to 50.00
Steel car axles, Chicago	46.00 to 47.00

IRON FOUNDRY USE
(Gross Tons)

Car wheels, (iron), Pitts.	$35.00 to 38.00
Car wheels, (steel), Pitts.	45.00
Car wheels, Chicago	35.00 to 36.00
Car wheels, eastern Pa.	40.00
Car wheels, Buffalo	37.00 to 38.00
Car wheels, New York	33.00 to 35.00
Car wheels, St. Louis	36.00 to 36.50
Car wheels, Birmingham.	26.00 to 27.00
Car wheels, Cleveland	36.00 to 37.00
Tram car wheels, Birming.	25.00 to 26.00
Cast, No. 1, Birmingham.	27.50 to 28.00
Cast, 1, heavy, N. J. points.	35.00
Cast, 1 machy., N. J. points	40.00
Cast, No. 1, eastern Pa.	38.00 to 39.00
Cast, No. 1, Pittsburgh.	35.00 to 37.00
Malleable railroad, Cincinnati	21.50 to 22.00
Malleable railroad, Cleveland.	40.00 to 41.00
Malleable railroad, Buffalo	33.00 to 35.00
Malleable railroad, Pittsburgh	30.00 to 32.00
Malleable railroad, east. Pa.	32.00 to 34.00

(Net Tons)

Cast No. 1, Cleveland	33.00 to 34.00
Cast, No. 1, Chicago	28.50 to 29.50
Cast, No. 1, Cincinnati	29.00 to 29.50
Cast, No. 1, St. Louis	27.00 to 28.50
Malleable railroad, Chicago.	32.50 to 33.50
Malleable railroad, St. Louis	27.00 to 28.00
Malleable agricultural, Chgo.	26.50 to 27.50

MISCELLANEOUS USES
(Gross Tons)

Reroll. rails, 5 ft. & ov., Pitts.	$50.00
Reroll. rails, 5 ft. & ov., Chgo.	45.00 to 46.00
Reroll. rails, 5 ft. & ov., E. Pa.	50.00 to 55.00
Reroll. rails, 5 ft. & ov., St. L.	47.00 to 48.00
Reroll. rails, 5 ft. or ov., Cleve.	50.00 to 51.00
Rerolling rails, long, Birming.	38.00 to 40.00

(Net Tons)

Boiler punchings, Chicago	32.00 to 35.00
Locomotive tires, Chicago	50.00 to 51.00
Locomotive tires, St. Louis.	45.00 to 46.00

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